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Volume XXXIII October, 1957 No. 4

A SYNOPSIS OF THE CALIFORNIA DEATHWATCH BEETLES OF THE GENUS ERNOBIUS THOMSON, WITH DESCRIPTIONS OF TWO NEW SPECIES WHICH ATTACK PINE CONES

(Coleoptera: Anobiidae)

HERBERT RUCKES, JR.[1]

University of California, Berkeley

During investigations of the insects infesting the cones and seeds of pines in California, two new species of the genus *Ernobius* were collected. In order to provide names for use elsewhere, their descriptions are given below. The new species are superficially similar to *Ernobius punctulatus* (LeConte); and I am indebted to Dr. E. A. Chapin for comparing them with the LeConte syntypes in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts. The new species can be readily identified by their descriptions and are included in the following key.

A preliminary key to the California species of *Ernobius* Thomson:

1	Antennae 10-segmented	*E. trapezoideus* Fall
	Antennae 11-segmented	2
2(1)	Pronotum with side serrate, maxillary palpi with last segment widest at or behind the middle	*E. marginicollis* (LeConte)
	Pronotum with sides entire, maxillary palpi with last segment widest at apex	3
3(2)	Antennae with ninth segment distinctly shorter than the two preceding united	*E. conicola* Fisher
	Antenna with ninth segment longer than the two preceding united	4
4(3)	Antennae with ninth segment never longer than three preceding united	5
	Antennae with ninth segment never shorter than three preceding united	12
5(4)	Antennae with ninth segment equal to two preceding united	6
	Antennae with ninth segment longer than two preceding united	7
6(5)	Antennae with ninth segment three times as long as wide	*E. punctulatus* (LeConte)
	Antennae with ninth segment four times as long as wide	*E. socialis* Fall

[1] This is one of a series of studies made possible by a grant from the Gilbert M. Walker Trust.

7(5) Antennae with ninth segment three times as long as wide or shorter 8
Antennae with ninth segment four times as long as wide or longer 9

8(7) Antennae with ninth segment twice as long as wide ..... *E. debilis* LeConte
Antennae with ninth segment three times as long as wide 10

9(7) Antennae with ninth segment four times as long as wide ..... *E. socialis* Fall
Antennae with ninth segment five times as long as wide ..... *E. caudatus* Van Dyke

10(8) Abdomen with sternites black or mottled black and brown ..... *E. melanoventris* Ruckes
Abdomen with sternites brown 11

11(10) Antenna with third segment equal in length to the sixth ..... *E. pinicola* Ruckes
Antenna with third segment shorter than sixth ..... *E. punctulatus* (LeConte)

12(4) Antenna with ninth segment not shorter than preceding five united (males) 13
Antennae with ninth segment not shorter than preceding three united, not longer than preceding five united (females) 18

13(12) Antennae with ninth segment equal to preceding five united 14
Antennae with ninth segment longer than preceding five united 15

14(13) Antennae with ninth segment six times as long as wide, sixth ventral segment with feeble notch ..... *E. crotchii* Fall
Antennae with ninth segment seven times as long as wide, sixth ventral segment with deep narrow notch, one-third length of segment ..... *E. californicus* Fisher

15(13) Antennae with ninth segment equal to six preceding united 16
Antennae with ninth segment equal to seven preceding united, about twelve times as long as wide ..... *E. alutaceus* LeConte

16(15) Antennae with ninth segment four times as long as wide, beetle black, shiny ..... *E. nigrans* Fall
Antennae with ninth segment more than four times as long as wide 17

17(16) Integument dark brown to dull black ..... *E. pallitarsis* Fall
Integument pale brown ..... *E. montanus* Fall

18(12) Antennae with ninth segment longer than three but shorter than four preceding united 19
Antennae with ninth segment equal to four preceding united 21

19(18) Antennae with ninth segment 6.5 times as long as wide ..... *E. alutaceus* LeConte
Antennae with ninth segment four times as long as wide 20

20(19) Abdomen with sixth sternite with a notch, 1.5 times as wide as deep ..... *E. californicus* Fisher
Abdomen with sixth sternite without notch ..... *E. crotchii* Fall

21(18) Antennae with ninth segment three times as long as wide.....22
Antennae with ninth segment four times as long as wide.....23
22(21) Integument black, shiny.....*E. nigrans* Fall
Elytra and head black, prothorax red-brown.....*E. collaris* Fall
23(21) Integument brown to dull black.....*E. pallitarsis* Fall
Integument pale brown.....*E. montanus* Fall

ERNOBIUS MARGINICOLLIS (LeConte)

This species does not properly belong in *Ernobius* since the genitalia of the male are symmetrical, unlike those of the other species included in the genus. Biological evidence also confirm this. Böving (1954), in his larval studies of the Anobiidae, also recognizes this species as something other than *Ernobius*.

ERNOBIUS DEBILIS LeConte

This species was placed in synonomy with *E. punctulatus* (LeConte) by Fall in 1905. However, there seems to be no doubt of its validity. It may be recognized easily by the characters presented in the accompanying key.

ERNOBIUS CONICOLA Fisher

Ernobius cupressi Van Dyke 1912 (*nec* Chobaut, 1899, p. 104).
Ernobius conicola Fisher, 1919.
Ernobius americanus Pic, 1934, (*n.n. pro E. cupressi* V. D. 1912, p. 140, *nec* Chobaut 1899, p. 104).

Van Dyke (1923) correctly synonymized his preoccupied *cupressi* with *Ernobius conicola* Fisher and Pic's name was unnecessarily proposed for this species.

Ernobius melanoventris Ruckes, new species

Male.—Length 2.5–4.2 mm., integument piceous above, thoracic sterna and abdomen black; pubescence of pronotum and elytra recumbent, golden. Head with front punctate, each puncture surrounded by a raised annulus; antennae black, eleven-segmented with the three terminal segments elongate; sides of segments parallel, segments five, six, seven, and eight each about as wide as nine, segments three and four narrower. Ninth segment three times as long as wide and slightly longer than seventh and eighth united; sixth and eighth segments equal; fifth and seventh segments subequal but the fifth a little longer, each longer than sixth and eighth, second, third and fourth segments subequal, the third slightly longer than second and fourth, third segment about twice as long as wide. Pronotum with punctures like those of head, sides margined, arcuate and slightly convergent toward the front. Elytra with light margin along the edge of the suture expanding to produce a light colored area at the apices. Abdomen with sixth sternite rounded at apex.

Female.—Similar to male, length, 3.2–4.8 mm., head dark, pronotum and elytra testaceus, clothed with recumbent golden hairs, thoracic sterna black, abdomen mottled brown and black. Head punctate, each puncture surrounded by a raised annulus; antennae eleven segmented with the three

terminal segments elongate and black, remaining segments brown, sides of segments narrow at base, diverging slightly, widest at apex. Ninth segment about three times as long as wide and slightly longer than seventh and eighth united, segments six and eight equal, segments five and seven subequal, the fifth a little longer than the seventh; each longer than the sixth or eighth, segment four the smallest, segments two and three a little longer than the fourth but shorter than all others, segments five, six, seven and eight each narrower than the ninth and segments three and four narrower than the fifth, sixth, seventh or eighth. Pronotum similarly punctate, sides margined, arcuate and slightly convergent toward the front. Elytra with light margin along the edge of the suture, exanding to produce a light colored area at the apices. Abdomen with a broad "U"-shaped emargination, about twice as wide as deep, at apex of sixth sternite.

Holotype male, MT. LAGUNA POST OFFICE, SAN DIEGO COUNTY, CALIFORNIA, reared from cone of *Pinus jeffreyi* (H. Ruckes, Jr., 1956), deposited in the California Academy of Sciences. Allotype female, same data as holotype. Paratypes are from Camp Ole, Cleveland National Forest, San Diego County, California, reared from cone of *Pinus jeffreyi*, (H. Ruckes, Jr., 1956), Camp Cuyamaca, San Diego County, California, reared from cone of *Pinus jeffreyi*, (H. Ruckes, Jr., 1956), Dorrington, Calavaras County, California, reared from cone of *Pinus ponderosa* (H. Ruckes, Jr., 1956). Paratypes will be deposited in the collections of The American Museum of Natural History, New York, New York, Museum of Comparative Zoology, Cambridge, Massachusetts, The U.S. National Museum, Washington, D.C., The California Academy of Sciences, San Francisco, California and the California Insect Survey, University of California, Berkeley, California.

Ernobius pinicola Ruckes, new species

Male.—Length 2.8–4.5 mm. Integument brown, pronotum and elytra clothed with recumbent golden hairs. Head punctate, each puncture surrounded by a raised annulus; antennae eleven-segmented, with the three terminal segments elongate. Segment nine longer than the seventh and eighth united, about three times as long as wide. Segments six and eight equal, segments five and seven equal each longer than the sixth or eighth and about twice as long as wide. Segments two, three, and four subequal, segment three somewhat longer than the second or fourth, and as long as the sixth. Segments five, six, seven and eight as wide as segment nine, segments three and four narrower. Pronotum punctate like head, margined, sides arcuate, slightly convergent toward the front. Elytra with light margin along the edge of the suture expanding to produce a light colored area at the apices. Abdomen with a slightly bisinuate margin at apex of sixth sternite.

Female.—Length, 3.1–4.8 mm. Integument brown, pronotum and elytra clothed with recumbent golden hairs. Head and pronotum punctate, each

puncture surrounded by a raised annulus; antennae eleven-segmented with the three terminal segments elongate, segment nine longer than seventh and eighth united, about three times as long as wide, segments six and eight equal, segments five and seven subequal each longer than the sixth or eighth and each about twice as long as wide, segment four the shortest, segments two and three each equal in one length to segment six and about twice as long as wide, segments five, six, seven and eight narrower than segment nine, segments three and four narrower than following segments. Pronotum margined, with sides arcuate and slightly convergent toward the front. Elytra with light margin along the edge of the suture expanding to produce a light colored area at the apices. Abdomen with a slightly rounded emargination, about one and a half times as wide as deep, at apex of sixth sternite.

Holotype male, CAMP CUYAMACA, SAN DIEGO COUNTY, CALIFORNIA, reared from cone of *Pinus jeffreyi* (H. Ruckes, Jr., 1956), deposited in the California Academy of Sciences. Allotype female, same data as holotype. Paratypes, same data as holotype. Paratypes will be deposited in the collections of The American Museum of Natural History, New York, New York, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, The U.S. National Museum, Washington, D.C., The California Academy of Sciences, San Francisco, California, and The California Insect Survey, University of California, Berkeley, California.

The author is indebted to Dr. T. J. Spilman, The U.S. National Museum, Washington, D.C., Mr. H. B. Leech, California Academy of Sciences, San Francisco, California, Mr. C. B. Eaton, Division of Forest Insects, California Forest and Range Experiment Station, U.S.D.A., Berkeley, California, for making available the *Ernobius* collections in their charge, and to Dr. E. A. Chapin at The Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, for making comparisons with type specimens.

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ZOOLOGICAL NOMENCLATURE: NOTICE OF PROPOSED USE OF THE PLENARY POWERS IN CERTAIN CASES FOR THE AVOIDANCE OF CONFUSION AND THE VALIDATION OF CURRENT NOMENCLATORIAL PRACTICE. (A.(n.s.)38)

Notice is hereby given that the possible use by the International Commission on Zoological Nomenclature of its Plenary Powers is involved in applications relating to the under-mentioned names included in the *Bulletin of Zoological Nomenclature*, which was published on 26th August, 1957.

(a) *Applications in Part 8 of Volume 13*

(1) *padi* Linnaeus, 1758 *(Aphis)* validation of, for the European Bird Cherry Aphid (Class Insecta, Order Hemiptera) (Z.N.(S)1225)

(2) *anonyma* Lewis, 1872 *(Limenitis)*, suppression of (Class Insecta, Order Lepidoptera) (Z.N.(S)1180);

(b) *Applications in Part 12 of Volume 12*

Attention is also drawn to the proposed adoption of a Declaration clarifying the status of adjectival specific names consisting of partly Latinied words (Z.N.(S)1064).

Notice is hereby given that the possible use by the International Commission on Zoological Nomenclature of its Plenary Powers is involved in an application relating to the undermentioned names included in Part 9 of Volume 13 of the *Bulletin of Zoological Nomenclature* published on 30th September, 1957.

(1) *Pentila* Westwood, [1851], validation of, and designation for, and for *Liptena* Westwood, [1851], of type species, in harmony with accustomed usage (Class Insecta, Order Lepidoptera) (Z.N.(S)476);

(2) *Centris* Fabricius, 1804, designation of a type species for, in harmony with accustomed usage; *dimidiata* Fabricius, 1793 *(Apis)*, validation of (Class Insecta, Order Hymenoptera) (Z.N.(S)770).

Attention is also drawn to the proposed adoption of a *Declaration* clarifying the question whether in the case of a zoological name in which two adjacent vowels constitute separate syllables a symbol signifying the diaeresis should under Article 20 be placed over the second of the vowels concerned. (Z.N.(S)1013).

Any specialist who may desire to comment on any of the foregoing applications is invited to do so in writing to the Secretary to the International Commission (Address: 28 Park Village East, Regent's Park, London N.W. 1, England) as soon as possible. Every such comment should be clearly marked with the Commission's File Number as given in the present Notice, and sent *in duplicate*. —FRANCIS HEMMING, *Secretary to the International Commission on Zoological Nomenclature.*

TWO MITES OF THE GENUS CHEYLOSTIGMAEUS, INCLUDING A NEW SPECIES FROM POINT BARROW, ALASKA

(Acarina: Stigmaeidae)

F. M. SUMMERS

University of California, Davis

Stigmaeid mites currently assigned to the genus *Cheylostigmaeus* Willmann are distinguishable from those of allied genera by a combination of characters, the most obvious of which is the configuration of the two principal dorsal plates. Females of the six described species are, with one exception (*C. longisetosus* Willmann), so very much alike that Willmann (1951, 1952) found it necessary to separate species on the basis of characters exhibited by the mouthparts of males. This is unfortunate for routine identifications, since specimens of this group are more frequently encountered as casual females. A synoptic diagnosis of the genus and a key to the males of known species are given by Willmann (1952). None of these have been reported heretofore from America.

This paper is concerned with two species of this genus. One of these is found in western parts of the United States. It is provisionally identified here as *C. pannonicus* Willmann. The other is a new species taken in Alaska by Dr. P. D. Hurd under the auspices of an Arctic Institute of North America grant (Project O.N.R.–173) entitled: Analysis of Soil Invertebrate Samples from Barrow, Alaska.

CHEYLOSTIGMAEUS PANNONICUS WILLMANN

(Plate 1, figures 1–4)

Cheylostigmaeus pannonicus Willmann, 1951, Sitzungsb. Osterr. Akad. Wissensch., Mathem.—naturw. Kl., Abt. I, 160 (1–2):137.

Female.—Chelicerae prominent, with tapered fixed digits ensheathing stylets almost to tips. Rostrum conical, not longer than palpfemur, its lateral margins without noteworthy adornments or lamellae. Two pairs of whip-like setae occur on venter of gnathosoma; one pair (28μ) on basis capituli, one pair (44μ) on rostrum proper; alveoli of shorter, posterior pair slightly farther apart than those of anterior pair. Palp segments noticeably sclerotized but without unusual spines or apophyses; each palptibia armed with a robust terminal claw and a short bicuspidate accessory claw adjoining base of terminal claw. Palptarsus cylindrical, pendant, about as long as larger claw; equipped with seven bristles or sensilla, as follows: one long apical trident, five setiform bristles, and one basal claviform sensillum.

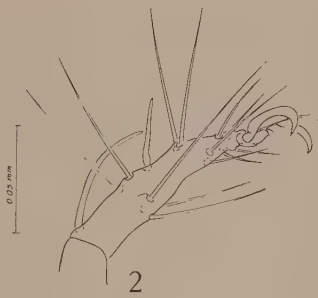
Idiosoma provided with two extensive plates which together almost cover its entire dorsal but not latero-pleural surfaces (fig. 4). Anterior plate covering propodosoma bears four pairs of setae, of which pre-ocular pair is the longest. Posterior plate covering hysterosoma bears six pairs of setae, all fairly uniform in type, but hindermost pair is longer than pair next in front and approximately as long as pre-oculars of propodosoma. Two pairs of terminal setae borne on separate caudal plate which is not confluent with genital plate below; median setae slightly longer than laterals of terminal group. Dorsal plates show areas of surface texture in some specimens only as coarse dimples or closely-set pits—these not generally apparent over entire surface or on every specimen. Body setae and some of those on appendages stiff, straight or slightly curved, tapered to pointed tips; each seta embedded in a thick hyaline matrix which forms a bluntly rounded sheath over the tip of the seta proper. Sclerites of venter restricted to small areas of articulation with coxal groups; these sclerites not confluent in mid-line. Six setae situated on sclerites of venter, one pair between anterior coxal groups, two pairs between posterior groups (coxae III–IV). Ano-genital plate rounded in front, narrowed posteriorly to anal elevation, with three pairs subequal genital setae. Anus subterminal; anal covers with three pairs of setae, hindmost pair slightly longer and more robust than those in front. Genu I with three acicular setae and one lateral spiniform sensillum (by analogy with other raphignathoids) as long as seta next adjacent (fig. 3) Tibia I with five setae plus two special sensilla—postero-dorsal sensillum curved near outer tip and about one-half as long as nearest seta; latero-distal sensillum very short (12μ), claviform. Tarsus I with 13 acicular bristles plus one moderately long sensillum (33μ) situated midway between dorsal setae of successive whorls. Spiniform sensillum of genu II reduced to tiny spur (10μ); latero-distal sensillum of tibia II absent; dorsal claviform sensillum of tarsus II somewhat smaller than on tarsus I. Genua III and IV each with single acicular seta. Sensilla of tibia III and IV as on tibia II; claviform sensillum of tarsi gradually reduced in size on successive legs; on tarsus IV this structure is diminutive (9μ). Measurements averaged for six specimens partly compressed in Hoyer's fluid: idiosoma—465μ; idiosoma plus rostrum—560μ; pre-ocular seta—95μ; post-ocular setae—69μ; posteriormost setae on hysterosomal plate—90μ; setae next in front —79μ.

Male.—Secondary sex differences apparent in reduced size of idiosoma, thickening of maxillicoxal areas and palpi, terminal location of ano-genital apparatus and accessory sensillum on each tarsus. Margins of rostrum flared to form a pair of sclerotized, leaf-like, anteriorly directed lamellae (fig. 1); each lamella incised in front to appear bicuspidate when viewed from above. A pair of rostral setae insert on these lamellae, one seta on each lamella,

Explanation of Plate 1

Cheylostigmaeus pannonicus: Fig. 1, venter of rostrum, male; Fig. 2, tarsus I, left leg of male; Fig. 3, distal segments of right leg I, female; Fig. 4, dorsal aspect of female. Uppermost millimeter scale applicable to figures 1–3.

1



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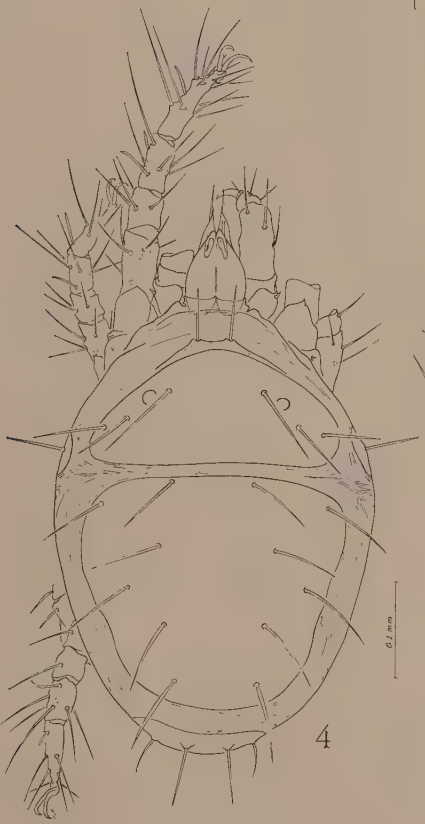

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close behind incision. Palpal segments robust, without apophyses or other noteworthy emarginations. A minute sensory peg on upper aspect of each maxillicoxa, spine-like, on conspicuous pedicel. Idiosoma sagittate in outline, with anus terminal. Anal covers with three pairs of setae, two pairs of which are diminutive. Only two pairs of genital setae on venter of opisthosoma. Chaetotaxy of appendages identical between sexes except that male has an additional clavate sensillum at base of each tarsus I–IV; this special sensillum (*solénidion mâle*, Grandjean, 1944) repeated with slight reduction in length on successive tarsi; its total length (64μ), on tarus I slightly greater than distance between its own alveolus and alveolus of shorter clavate organ on mid-portion of segment (fig. 2). Measurements averaged for two specimens: idiosoma—343μ; idiosoma plus rostrum—465μ; preocular setae—83μ; post-ocular setae—46μ; posteriormost setae on hysterosomal plate—65μ; setae next in front—46μ.

Collection Data. Male and females, MURRAY, UTAH, Oct. 6, 1949 (G. F. Knowlton and Shih-Chun Ma), *ex* piles of celery waste. Male and females, HUGHSON, CALIFORNIA, Mar. 31, 1948 (F. M. Summers), *ex* leaf trash in peach orchard.

Willmann (1951) has already indicated that the bicuspidate appearance of the rostral lamallae is diagnostic for *C. pannonicus*. The mites herein identified as *pannonicus* agree with Willmann's synoptic description in this respect. However, there may be a discrepance in that the rostrum of males from Austria is said to project forward to the base of the palptibia whereas the rostral tip of the American males does not protude beyond the distal end of the palpfemur.

The structure and disposition of the heterogeneous bristles of the appendages are taxonomic characters of supplemental value for distinguishing genera and, sometimes, species within the superfamily Raphignathoidea. The term "sensillum" is used advisedly in reference to several of the peculiar bristles which do not have the typical acicular or whip-like form. These may be regarded as structurally modified setae; but others or all of the acicular variety are undoubtedly sensory in function.

Cheylostigmaeus torulus Summers, new species

(Plate 2, figures 5–9)

Male.—Inflated basal joints of chelicerae ornamented dorsally with a pair of minute, knob-like processes, one on the mid-dorsal portion of each

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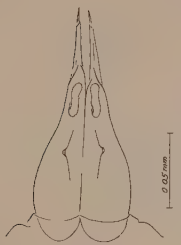
EXPLANATION OF PLATE 2

Cheylostigmaeus torulus: Fig. 5, chelicerae, male, dorsal; Fig. 6, inner face of right palpus, male; Fig. 7, venter of rostrum, male; Fig. 8, ventral opisthosoma, male; Fig. 9, dorsal view of male. Millimeter scale of figure 5 applicable also to figure 8; scale of figure 7 applies also to figure 6.



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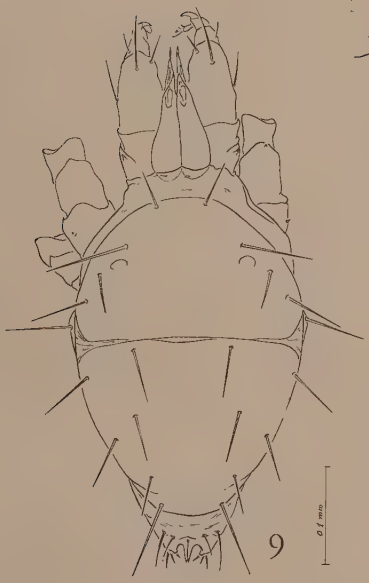

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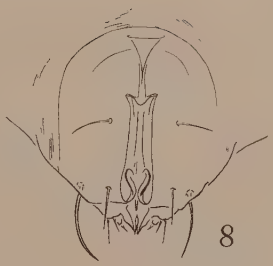

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chelicera (fig. 5). Rostrum with a pair of leaf-like lamellae, each lamella incised in front to appear bicuspidate (holotype) or with several additional minor cusps on outer border (fig. 7). Posterior pair of rostral setae arise on these lamellae. Mesal surface of each palpfemur heavily sclerotized, provided with two blunt apophyses: posteriormost apophysis conical; anterior apophysis a less elevated, more rounded swelling (fig. 6). Dorsal setae of idiosoma moderately fine, straight, faintly plumose, without hyaline envelope or sheath (setae of female show this delicate sheath); setae of pre-ocular pair and most posterior pair of hysterosomal plate approximately equal in length and conspicuously longer than others of dorsum; each of these approximately twice as long as setae of pairs next nearest. Sclerites of genitalia not known to have features of diagnostic value. Special clavate sensillum *(solénidion)* peculiar to tarsi of males (35μ) about one-half as long as the distance between its own alveolus and the alveolus of the comparable structure located dorsally between the two sets of long tarsal bristles; this male tarsal organ repeated with slight reduction in length on successive tarsi. Measurements, averaged for three specimens: idiosoma —382μ; idiosoma plus rostrum—505μj pre-ocular setae—80μ; post-ocular setae—41μ; posteriormost setae on hysterosomal plate—74μ; setae next in front—39μ.

Holotype male, POINT BARROW, ALASKA, July 26, 1953 (P. D. Hurd), *ex* moss substrate over peat with scattered *Carex*, *Poa*, *Petasites*, and lichens.

Paratypes. One male, Point Barrow, Alaska, July 8, 1953; two males, August 1, 1953 (P. D. Hurd), *ex* same substrate as type.

Holotype deposited in U.S. National Museum, No. 2445. One paratype male and several females deposited with the holotype; others retained in author's collection.

The presence of a pair of small, knob-like processes on the dorsal aspect of the chelicerae of males is unique for the species. The rostral lamellae resemble those of *C. pannonicus*, whereas the occurrence of apophyses on the inner face of the palpfemur is characteristic of *C. grandiceps*.

Females of the series from Point Barrow are presumed to be of the same species as the males described as *C. torulus*. The writer is unable to distinguish between these and the females herein identified as *C. pannonicus*.

C. torulus may be conspecific with *Liostigmaeus pulchellus* Thor, 1930. Several of the specimens in the Point Barrow collection were first identified as belonging in *Liostigmaeus* because they appeared to be distinctive in body form, as illustrated by Thor. Later, however, critical study revealed that these specimens

are simply undistorted (not compressed) mounts of *C. torulus*. This suspected synonymy cannot be further clarified until males of the Norwegian species are found. It is advisable, therefore, to describe the Alaskan mite as a new species and to include it in Willmann's definable genus.

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A RECORD OF STANLEYA AS A FOOD PLANT OF PIERIS BECKERI

(Lepidoptera: Pieridae)

The article in a recent issue of the Pan-Pacific Entomologist (XXXIII:156, 1957) by Jerry A. Powell, recording the occurrence of larvae of *Pieris beckeri* on *Stanleya*, caused the present writer to remember a specimen of *Pieris beckeri* that came to him in a roundabout way.

A plant of *Stanleya* had been brought to San Jose State College from the Mohave Desert, and put on display as a plant specimen in a beaker of water. It was found that a larva was feeding on this plant. The larva was brought to me but by that time had pupated. The pupa produced a fine normal female *Pieris beckeri* on June 2, 1952. The plant had been collected on the Mohave Desert on May 12, 1952.

This additional record would indicate that *Stanleya* is probably a regular food plant of *Pieris beckeri*.—J. W. Tilden, *San Jose State College, San Jose, California.*

FORTHCOMING PUBLICATION OF THE FIRST INSTALMENTS OF THE "OFFICIAL LISTS" OF VALID ZOOLOGICAL NAMES AND OF THE "OFFICIAL INDEXES" OF REJECTED AND INVALID NAMES

The International Trust for Zoological Nomenclature has pleasure in announcing that arrangements have been made for the immediate publication in book-form of the first instalment of each of the "Official Lists" of valid zoological names and of the corresponding "Official Indexes" of rejected and invalid names, together with the first instalments of the "Official Lists" of works approved as available for zoological nomenclature and of the "Official Index" of rejected and invalid works. The categories of names covered by these "Lists" and "Indexes" range from specific names to ordinal names. The total number of entries contained in the instalments now to be published amounts to about five thousand.

The first of these "Lists," that relating to generic names, was established by the Ninth International Congress of Zoology, Monaco, 1913, while the most recent were brought into existence by the Fourteenth Congress at Copenhagen in 1953. The entries made on these "Lists" and "Indexes" have been promulgated from time to time by the International Commission on Zoological Nomenclature in individual "Opinions" and "Directions" but owing to the large number of documents so involved it has become increasingly difficult for specialists to ascertain what names have so far been registered under this system. This difficulty will completely disappear on the publication of the instalments now in the press, each of which will be supplied both with a full alphabetical index and also with alphabetical indexes arranged by major groups. The groups so selected will normally be Classes but in the case of large Classes containing well-recognised Orders, these supplementary indexes will be on an ordinal basis.

All enquiries in regard to the above publications should be addressed to the International Trust for Zoological Nomenclature at its Publications Office (41 Queen's Gate, London S.W. 7).—FRANCIS HEMMING, *Managing Director and Secretary, International Trust for Zoological Nomenclature and Secretary to the International Commission on Zoological Nomenclature*, 28 Park Village East, Regent's Park, London N.W. 1, England. 19th August, 1957.

A KEY TO THE NORTH AMERICAN MEMBERS OF THE GENUS ANTHOCORIS FALLEN

(Hemiptera: Anthocoridae)

Alex R. Hill, b.sc., ph.d., f.r.e.s.
Zoology Department, Glasgow University, Scotland

The writer is at present engaged in a study of the ecology and systematics of the genus *Anthocoris*. During a visit to North America in 1955 an opportunity was taken to study the species occurring there. Shortage of time, due to the peripatetic nature of the visit and to pressure of other work, necessitated that the study be restricted to research of a purely systematic nature.

A search through the literature soon revealed that what had been published about the North American members of this genus was of rather small volume and widely scattered in a variety of journals. The examination of collections in museums in Canada and the United States also revealed a disappointingly meagre number of specimens. So far as can be ascertained, it would appear that, since Reuter's Monograph was published in 1885, no one has published a key to the North American species of the genus *Anthocoris*.

The impression formed, from numerous collecting excursions and from conversations with experienced Hemipterists, is that *Anthocoris* species are somewhat uncommon insects in North America, or, at best, can be described as locally common. It is certain that, from a similar amount of collecting done in Britain, many more specimens would have been obtained than were forthcoming in America.

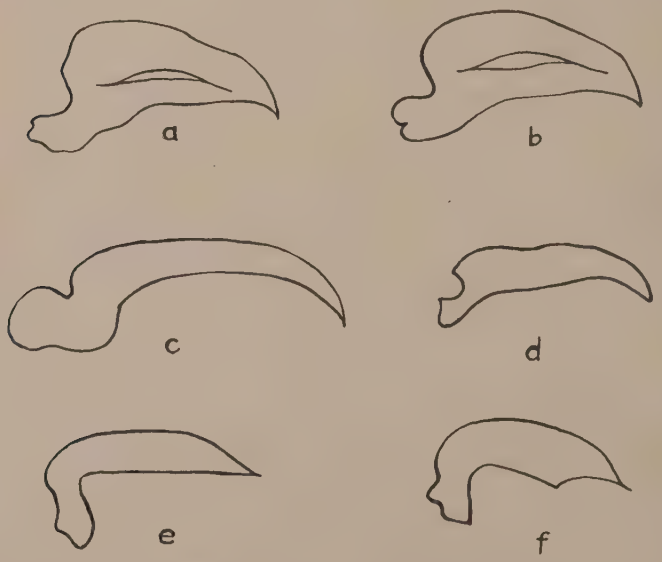
The present paper is a preliminary report on the Canadian and United States members of the genus which number eleven. A key has been constructed which should satisfactorily separate the species. At first some difficulty may be experienced in determining the relative degrees of shininess of the different regions of the hemielytra but, with a carefully adjusted source of illumination and a little practice these difficulties are soon overcome.

Preparations were made of the left parameres of males of as many species as were available, and these are of assistance, not only in separating species from each other, but also in indicating that the species tend to fall into the following three groups:

Group 1, *A antevolens, A. musculus;* Group 2, *A. bakeri, A. melanoceros;* Group 3, *A. whitei, A. albiger.*

A. bakeri and *A. melanoceros* have been placed together tentatively; they do not, however, form such a well-defined group as do the others. Unfortunately no males of *A. dimidiatus, fulvipennis, nigripes, variipes* or *tristis* were available in any of the museum collection examined nor were they obtained during collecting excursions.

The two species *A. antevolens* (White) and *A. musculus* (Say) comprising Group 1, very closely resemble each other in external form and color and in the shape of the left parameres of the males. They differ, however, in the degree of hirsuteness of the hemielytra—a feature which can be discerned under a binocular microscope—and perhaps also in their geographical distribution. So far as can be judged from our present (and admittedly scanty) knowledge of the latter, both appear to be fairly widely distri-



EXPLANATION OF FIGURES

Fig. 1, Left parameres of males of (a) *Anthocoris musculus,* (b) *A. antevolens,* (c) *A. bakeri,* (d) *A. melanoceros,* (e) *A. whitei,* (f) *albiger.*

buted in the United States and Canada with *A. musculus* more common in the east while *A. antevolens* seems to predominate in the west. That the two species are closely related cannot be doubted. The question, however, arises as to whether in fact they are two species. In order to solve this problem, it is important that large numbers of specimens of both species from numerous localities be carefully examined and if possible cross-breeding experiments be performed. The writer will be extremely grateful if North American entomologists will send him any specimens of either or both of these species for further study. The breeding experiments will naturally be possible only in the United States and Canada. It is hoped that the key for the identification of the North American *Anthocoris* species will stimulate American and Canadian entomologists to search further for these rather obscure but interesting insects. A further paper giving a more detailed account of these species is now in preparation.

KEY TO THE SPECIES

1. Hemielytra entirely shining 2
– Hemielytra dull, at least in part 4
2. Large robust species, length 3.7–4.6 mm.; antennae and pronotum entirely black; legs dark ferruginous to piceous; pale testaceous spot usually visible at the inner angle of the cuneus. Left paramere of male blade-like and curved abruptly at the tip. (Fig. 1d) ..... *A. melanoceros* Reuter
– Smaller, length 3.3–4.5 mm.; antenae and pronotum usually not entirely black 3
3. Hemielytra with a very distinct pubescence; left paramere of male broad and beak-shaped (Fig. 1b); hairs of cuneus distinctly longer than distance between their origins; length 3.35–3.73 mm. ..... *A. antevolens* White
– Pubescence on hemielytra not distinct; left paramere of male broad and beak-shaped (Fig. 1a); hairs on cuneus not or little longer than distance between them; length 3.4–3.7 mm. ..... *A. musculus* (Say) (=*A. borealis* Dallas)
4. Clavus and corium entirely dull 5
– Corium shining, at least in part 8
5. Antennae slender and long—as long as the head, pronotum and scutellum as far as the transverse depression; length 3 mm. Head long in proportion to thorax, 18:13. Antennal segment 2 light in color, darkening distally; segments 1, 3 and 4 darker ..... *A. dimidiatus* Van Duzee
– Antennae not so long in proportion 6
6. Membrane pale with a fuscous patch in center; pubescence on hemielytra glittering golden, length 2.75 mm. ..... *A. fulvipennis* Reuter
– Membrane uniformly smoky or fuscous, or at most with basal margin only, pale 7

7. Femora and tibiae black; base of antennal joint 3 ferruginous; pubescence on hemielytra glittering silver; length 3.7–4.1 mm. ..... *A. nigripes* Reuter

– Femora pale at apex, tibiae more or less pale, antennal joint 2 in great part pale; length 3–3.5 mm ..... *A. variipes* Champion

8. Large species, length 4.5 mm.; antennae and legs piceous; antennae short, scarcely longer than width of pronotum at base ..... *A. tristis* Van Duzee

– Smaller species 9

9. Membrane dark with two lateral transverse white bars which in some specimens meet, forming a white transverse band. Left paramere of male blade-like and evenly curved (Fig. 1c); length 2.8–3.7 mm. ..... *A. bakeri* Poppius (=*A. b.* var. *ornatus* Van Duzee)

– No lateral white bars or white transverse band on membrane 10

10. Corium shining only at distal apex. Ratio total length of insect/length of head + pronotum = 3.12; legs, antennae and rostrum entirely black or pitchy. Left paramere scimitar-like (Fig. 1f) ..... *A. albiger* Reuter

– Corium more extensively shining, dull zone mainly confined to the region near the junction of the clavus and corium. Legs partly ferruginous, antennae rarely entirely black. Ratio total length of insect/length of head + pronotum 3.54. Left paramere *broad* and blade-shaped (Fig. 1e) ..... *A. whitei* Reuter

Acknowledgments

The author wishes to express his gratitude to the curators of numerous museums in Canada and the United States for the assistance which they so readily afforded him. Thanks is also due to Professor E. G. Linsley of the Department of Entomology and Parasitology and the Regents of the University of California for providing facilities for work at Berkeley; also to Dr. Paul D. Hurd, Jr., Mr. A. T. McClay, for the use of museum material at Berkeley and Davis respectively. Through the kindness of Professor J. W. McSwain of Berkeley and Dr. R. Stace-Smith of Vancouver the author was enabled to make a number of collecting excursions in the field for which he is most grateful. Special thanks are due to Professor R. L. Usinger for his interest in the work and for much helpful advice and discussion. While in the United States and Canada the writer was in receipt of a Travelling Scholarship from the Carnegie Trust for the Scottish Universities and a W. K. Kellogg International Fellowship. To these organizations grateful acknowledgment is made.

THREE NEW SPECIES OF THYANTA STÅL

(Heteroptera: Pentatomidae)

HERBERT RUCKES[1]

During a recent visit to the California Academy of Sciences the author was privileged to examine the collections of Hemiptera housed there. Among the many pentatomids, arranged by the late E. P. Van Duzee, a number of specimens were found that were all classified as *Thyanta perditor* (Fabricius) but which upon close examination showed sufficient differences in form and color to warrant further study. Dr. E. S. Ross, Curator of the collections, kindly allowed me to bring about eighty of these specimens east with me when I returned. From them three new species are hereby being erected. There is perfectly good reason for Van Duzee having identified all as *perditor* for they are, indeed, very similar not only to that species but to one another as well. The first inference that they might be different came from the fact that they were collected from three rather remote localities, i.e. the Galapagos Islands, the Revillagigedo Islands and Baja California. Intensive study of their characteristics reveals the differences stated in the following descriptions.

The ratios given in the descriptions are measurements made through a binocular microscope using a ×4 objective and a ×9 ocular fitted with a micrometer scale divided into one hundred linear units; they are not in terms of millimeters except as mentioned in connection with the hollotypes and allotypes.

The diagrams of the parameres are camera lucida tracings of dissected and mounted genitalia and were drawn through a compound monocular microscope.

Thyanta spectabilis Ruckes, new species

(Figures 3, 4)

Size somewhat larger than *T. perditor* (Fabricius) and much more triangular in form; dark tan, sometimes with olivaceous tints.

Head slightly longer than wide through the eyes (50/42), lateral margins a little less sinuate than in *perditor;* punctures coarse and somewhat congested; ocelli moderate in size, farther from the margins of the eyes than

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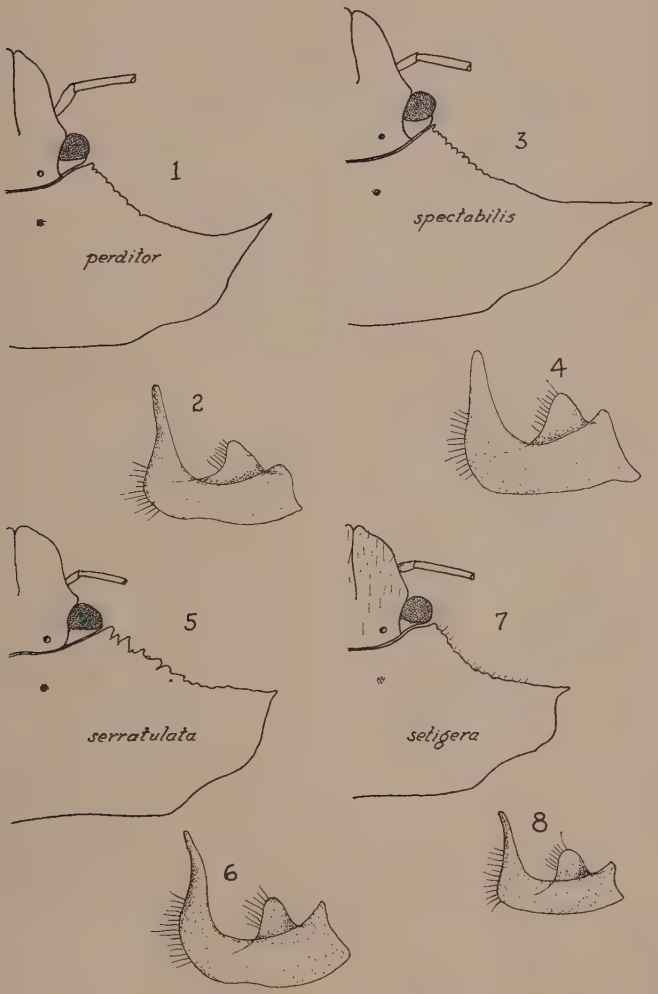
the diameter of an ocellus; surface of tylus and the disc between the ocelli darker than surrounding areas but not rufous as in *perditor*. Antennal segmental ratios: 10/23/25/29/25, i.e. the terminal four segments essentially subequal, with segment IV slightly longer; segments I, II and basal halves of III and IV dull yellow or yellowish green, the remainder fuscous with segment V slightly paler. *Pronotum* almost three and one-half times as wide across the tips of humeri as long medially (163/47); humeri projected laterally and slightly upward into extremely acute spines, much longer than in *perditor* and not directed forward as in that species (figs. 1, 3); surface two-toned, disc before transhumeral axis dull yellow, disc behind, dark brown; no transhumeral reddish band present as in *perditor;* the humeri themselves are rufous; punctures on anterior yellowish portion finer than those on posterior darker portion where the punctures are somewhat confluent; a vague median longitudinal black pinstripe present anteriorly between the two fuscous cicatrose spots, there traversing a small, raised rugosed area; antero-lateral margins somewhat less arcuate than in *perditor*, more distinctly serratulate and piceous; this piceous border usually continued anteriorly onto margins of head before eyes and posteriorly onto humeri and thence to basal portion of elytra. *Scutellum* slightly longer than wide across base (86/79), coarsely punctate and transversly rugose; color like that of posterior disc of pronotum, sometimes with a paler median longitudinal band present; frenum ends at a point about two-thirds the distance from base; apex moderately rounded. Elytra slightly paler than scutellum, very evenly punctured; numerous small, substellate pale points scattered about; an easily recognized notch on apical edge of corium adjacent to apical angle. Membrane hyaline with numerous brown dots and dashes, veins weakly raised. *Connexivum* widely exposed and strikingly alternated orange-red and black, the latter forming broad bands across the connexivum on each side of the paler segmental incisures. *Venter* dull yellow or tan throughout, sometimes with greenish tints anteriorly and laterally. Abdominal plates coarsely and shallowly punctate medially and much more finely laterally; both basal and apical angles of segments piceous; a row of fuscous to piceous post-spiracular spots present on each side. Legs dull yellow, darkening distally, tarsi tan or pale brown; some longer seta-like hairs interspersed between the short sparse pile on tibiae. Rostrum dull yellow, apical segment piceous and extending onto second (first visible) abdominal segment.

Male genital segment proportionately larger than in *perditor*, parameres more robust as shown in Figures 2 and 4.

Described from two male and six female specimens from Baja California.

Holotype male: (11 mm. long; 9 mm. across the humeri.) Angeles Bay, Gulf of California, Mexico. June 26, 1921; E. P. Van Duzee, collector. Deposited in the California Academy of Sciences. *Allotype female:* (11.75 mm. long; 9.5 mm. across the humeri.) Angeles Bay, Gulf of California. June 26, 1921;



EXPLANATION OF FIGURES

Figures 1, 3, 5 and 7, Right halves of head and pronotum of *Thyanta perditor* (Fig. 1), *T. spectabilis* (Fig. 3), *T. serratulata* (Fig. 5) and *T. setigera* (Fig. 7) to show differences in proportions. Figures 2, 4, 6 and 8, Ental aspects of the left parameres of *Thyanta perditor* (Fig. 2), *T. spectabilis* (Fig. 4), *T. serratulata* (Fig. 6) and *T. setigera* (Fig. 8).

E. P. Van Duzee, collector. Deposited in the California Academy of Sciences. *Paratypes:* One male, same data as above. Deposited in the American Museum of Natural History. Three females, same data as above, two deposited in the California Academy of Sciences, one in the American Museum of Natural History.

Thyanta serratulata Ruckes, new species

(Figures 5, 6)

Similar in size and appearance to *T. perditor* (Fabricius), slightly more broadly obovate; color dull green to brownish olive.

Head slightly shorter than wide through eyes (42/49); more strongly sinuate before eyes and more confusedly punctured than in *perditor;* disc between the ocelli and forward to apex obsolescent reddish or not colored at all; ocelli moderate in size, each farther from inner margin of eye than the diameter of an ocellus. Antennal segmental ratios 10/20/22/25/23, i.e. terminal four segments essentially subequal with segment IV only slightly longer; segment I pale, the remainder concolorous dull yellow-green, sometimes darkening apically. *Pronotum* about three times as wide across the humeri as long medially (137/45); antero-lateral margins serratulate, particularly anteriorly, and terminating at each humerus in a small, slightly forward projecting tooth, not a spine as in *perditor;* surface of pronotal disc transversely rugose as in *perditor* but lacking the transhumeral red band; a fuscous spot at inner corner of each cicatrix, the spot sometimes obsolescent; pronotal margin behind humeral tooth much less oblique than in *perditor. Scutellum* equilateral (82/82), coarsely punctured and transversely strongly rugose, especially anteriorly; frenum ends at a point about two-thirds the distance from base; margins of scutellar tongue somewhat convergent to a narrowly rounded apex, this concolorous with remainder of disc. *Elytra* evenly and finely punctured, sometimes provided with scattered pale points; membrane hyaline with only a few, basally placed tan or brown dots. *Connexivum* narrowly exposed, for the most part concolorous dull green or yellowish green, occasionally with marginal blotches of dull orange but not strikingly alternated; only the apical angle of each abdominal segment minutely piceous, incisures between segments not banded with dark color. *Abdominal venter* dull yellowish with a green tinge, punctures concentrated laterally; no post-spiracular piceous or fuscous points present, apical angles of abdominal segments only minutely piceous. Thoracic venter and head concolorous pale yellowish green, femora and proximal portions of tibiae likewise concolorous, distal portions of tibiae and entire tarsi becoming darker, sometimes fuscous. Pile on legs consisting of short stiff hairs, no longer than diameter of tibia, with no seta-like hairs interspersed. Rostrum reaching well beyond metacoxae, usually to the anterior margin of the third (second visible) abdominal segment.

Male genital segment much like that in *perditor,* but surface more deeply impressed laterally, median notch on the apical margin deeper and lateral apical angles more pronounced; apical spur of parameres more attenuated (Fig. 6). Female genital plates similar in the two species.

Described from 13 male and 13 female specimens as follows:

Holotype male: (11 mm. long; 6.5 mm. across the humeri.) Clarion Island, Revillagigedo Islands, Mexico, April 28, 1925; H. H. Keifer, collector. Deposited in the California Academy of Sciences. *Allotype female:* (12.75 mm. long; 7.75 mm. across the humeri.) Clarion Island, Revillagigedo Islands, Mexico, April 26, 1925; H. H. Keifer, collector. Deposited in the California Academy of Sciences. *Paratypes:* 12 males: Clarion Island, Revillagigedo Islands, Mexico, April 26–28, 1925; H. H. Keifer, collector. Eight deposited in the California Academy of Sciences, four in the American Museum of Natural History. Twelve females: same data as above.

Thyanta setigera Ruckes, new species

(Figures 7, 8)

Allied to *T. perditor* (Fabricius) but averaging only two-thirds the size of that species. Narrowly obovate, dull green to brown olivaceous.

Head somewhat shorter than wide through the eyes (37/45), weakly sinuate before eyes; dorsal surface finely and evenly punctured, provided with a scattering of short, seta-like, porrect hairs; ocelli moderate in size, farther from inner margins of the eyes than the diameter of an ocellus. Antennal segmental ratios: 10/20/20/23/19, i.e. terminal four segments essentially subequal with segment IV the longest; segments I, II and base of III dull greenish yellow, the remainder brown to fuscous, bases of IV and V slightly paler. *Pronotum* less than three times as wide across humeri as long medially (115/41); surface coarsely punctured and transversely rugose-reticulate; each humerus terminates in a short, laterally projecting, acute tooth (not a spine as in *perditor*) which arises from the anterior corner of humerus behind which the margin of the latter is at right angles to transhumeral axis, before abruptly rounding off into postero-lateral margin of pronotum; antero-lateral margins vaguely vertically rugose and slightly arcuate and provided with a submarginal row of short seta-like hairs on propleuron; inner corner of each cicatrix provided with a fuscous spot and a transverse reddish brown band present as in *perditor*. *Scutellum* equilateral (70/70), coarsely punctured and transversely strongly rugose; frenum ends at a point about two-thirds from base, lateral margins of apical third (the tongue) subparallel, apex narrowly rounded. Elytra very uniformly and coarsely punctured, apical margin of corium sometimes provided with a notch near apical angle. *Connexivum* narrowly exposed, margins somewhat reddish or orange as in *perditor*, connexival incisures vaguely bordered with dark, more frequently not colored. *Abdominal venter* yellowish green or darker, depending on dorsal coloring; a row of small piceous or fuscous post-

spiracular points present on each side, these not as conspicuous as in *perditor;* basal as well as apical angles of abdominal segments fuscous to piceous, giving the appearance of doubleness to each marginal spot. Bases of legs concolorous with thoracic plates, tibiae and tarsi becoming darker, usually fuscous; femora and tibiae provided with numerous long seta-like hairs interspersed with shorter pile. Rostrum reaching almost to apical margin of second (first visible) abdominal segment; in *perditor* the rostrum barely surpasses the metacoxae.

Male genital segment much like that in *perditor* but proportionately smaller: parameres smaller and slightly differently proportioned (Fig. 8). Plates of the female valves indistinguishable from those of *perditor.*

Described from 24 male and 27 female specimens as follows:

Holotype male: (10 mm. long; 6 mm. across the humeri.) Charles Island, Galapagos Islands. May 14, 1932; Templeton Crocker Expedition, M. Willows, collector. Deposited in the California Academy of Sciences. *Allotype female:* (10.75 mm. long; 6.1 mm. across the humeri.) Conway Bay, Indefatigable Island. Galapagos Islands, March 22, 1932; presented by the Templeton Crocker Expedition Collector. Deposited in the California Academy of Sciences. *Paratypes:* 23 Males, all from the Gallapagos Islands as follows: Indefatigable Island, June 13. 1932 (California Academy of Sciences, 4; American Museum of Natural History, 2); Jervis Island, June 6, 1932 (California Academy of Sciences, 7; American Museum of Natural History, 3); North Seymour Island, June 12, 1932 (California Academy of Sciences, 1); Chatham Island, April 16–18, 1932 (California Academy of Sciences, 1; American Museum of Natural History, 1); Albermarle Island, May 25, 1932 (California Academy of Sciences, 2; American Museum of Natural History, 1); James Island, January 9, 1932 (California Academy fo Sciences,1). 26 females all from the Galapagos Islands as follows: Indefatigable Island, June 13. 1932 (California Academy of Sciences, 3; American Museum of Natural History, 2); Jervis Island, June 6, 1932 (California Academy of Sciences, 5; American Museum of Natural History, 3); North Seymour Island, June 12. 1932 (California Academy of Sciences, 2; American Museum of Natural History, 2); Chatham Island (California Academy of Sciences, 2); Albermarle Island, November 26, 1906(California Academy of Sciences, 2); Gardner Island, April 22, 1932 (California Academy of Sciences, 2); James Island, April 4, 1932 (California Academy of Sciences, 2; American Museum of Natural History, 1).

THREE NEW CALIFORNIA SPIDER WASPS

(Hymenoptera, Pompilidae)

Howard E. Evans

Cornell University, Ithaca, N.Y.

In recent years the collections of the California Insect Survey have added immeasurably to our knowledge of the insect fauna of that state. The purpose of the present paper is to describe three new California spider wasps of the tribe Pompilini which have been discovered since my revision of that tribe (1950–51, Trans. Amer. Ent. Soc., 75:133–270, 76:207–361, 77:203–340).

Evagetes macswaini Evans, new species

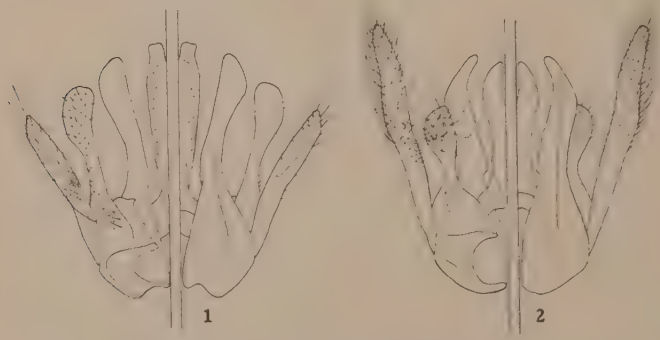
This species is a member of the *crassicornis* species-group of *Evagetes*, which is characterized by the weakly angulate posterior margin of the pronotum and the generally dull, non-metallic pubescence. The male is readily separable from both *crassicornis* and *subangulatus* by its distinctive genitalia and subgenital plate; the latter has a high median carina much as in the otherwise very different *padrinus*. The female is very similar to *crassicornis consimilis*, but the pubescence is nowhere silvery and there are a few small setae on the sides of the propodeum.

Male: Length of body 8.5 mm.; length of fore wing 6 mm. Color black; pubescence brownish, on sides of front and clypeus bright silvery. Wings subhyaline, with a dark marginal band. Scape without erect hairs; clypeus, front, vertex, temples, and occiput with numerous erect hairs; thoracic dorsum and pleura with scattered hairs; propodeum without erect hairs; front coxae slightly hairy, the other coxae barely so; femora without erect hairs. Clypeus 2.5 times as broad as high. Front broad, middle interocular distance .62 times transfacial distance; upper interocular distance .97 times lower interocular distance. Ocelli in a rather broad triangle; postocellar line greater than ocello-ocular line as 3:2. First four antennal segments in a ratio of 11:5:7:9, segment three only slightly longer than thick. Pronotum broadly, weakly angulate behind. Propodeum with the median line impressed in front, the declivity short and abrupt. Last segment of front tarsus strongly produced on inner margin; both front tarsal claws bifid, inner claw much more strongly curved than outer. Longer spur of hind tibia .8 the length of basitarsus. Fore wing with marginal cell short, removed from wing-tip by 1.5 times its own length; second submarginal cell narrowed by about half above; third submarginal cell narrowed by two-thirds above, narrower both above and below than the second. Abdomen slender, smooth, cylindrical. Emargination of sixth sternite U-shaped. Subgenital plate narrowly rounded apically, median line strongly, sharply elevated. Genitalia (fig. 1) characterized by short and broad parameres, a considerable portion

of apical half of each paramere hyaline and translucent; volsellae with numerous strong setae at base, but setae on digitus rather weak; parapenial lobes strongly expanded apically, longer than parameres and digiti, and about the same length as the rather slender, parallel-sided aedoeagus.

Female: Length of body 7.5 mm., length of fore wing 6 mm. Color black; pubescence brownish, obscurely reflecting violet, nowhere silvery. Fore wings moderately infuscated, with a darker marginal band; hind wings subhyaline, apex infuscated. Body with erect hairs about as in male, except that the middle and hind coxae are more hairy and the propodeum bears a few short hairs on the sides posteriorly; abdomen with strong setae ventrally and apically. Clypeus about three times as broad as high, its apical margin slightly concave. Front broad, middle interocular distance .62 times transfacial distance; upper interocular distance .8 the lower interocular distance. Ocelli in a broad triangle, postocellar line exceeding ocello-ocular line as 5:4. First four antennal segments in a ratio of about 3:1:3:3, segment three equal to half the upper interocular distance. Pronotum rather short, broadly and weakly angulate behind. Propodeum with median line impressed, the declivity short and oblique. Front basitarsus with three long comb-spines, each about twice as long as width of segment, apical one about as long as second tarsal segment. Venation is described for male, except the marginal cell removed about 1.7 times its own length from the wing-tip.

Variation: The male paratypes vary in length from 5.5 to 6.5 mm.; the middle interocular distance varies from .61 to .65 times the transfacial distance; the upper interocular distance in all the paratypes is equal to or very slightly greater than the



EXPLANATION OF FIGURES

Fig. 1, Male genitalia of *Eragetes macswaini* Evans, new species, holotype. Fig. 2, Male genitalia of *Aporinellus borregoensis* Evans, new species, holotype. In both cases the ventral aspect is shown on the left side, the dorsal on the right.

lower interocular distance; some of the specimens have a few short erect hairs on the sides of the propodeum. The female paratypes vary in length from 6 to 7 mm.; the middle interocular distance varies from .63 to .65 times the transfacial distance; the third antennal segment varies from .42 to .5 times the upper interocular distance. In all other respects the paratypes agree closely with the type and allotype.

Holotype male, BLANCO'S CORRAL, WHITE MOUNTAIN, MONO COUNTY, CALIFORNIA, 10,000 FEET ELEVATION, 30 June, 1953 (J. W. MacSwain). *Allotype* female, same data except 20 July, 1953. [Holotype and allotype in California Academy of Sciences.] Paratypes two females, three males, same data as type but dates varying from June 14 to July 7, 1953–54 (MacSwain, MacNeill, Burdick). Two males, Summit, Wyoming, 8835 feet elevation, Aug. 16, 1940 (H. E. Milliron). [Paratypes in California Insect Survey, U.S. National Museum, Cornell University, and University of Minnesota.]

Pompilus (Hesperopompilus) hilli Evans, new species

As I recently pointed out (1956, Ent. News, 67:9), *Pompilus evagetoides* Evans 1951 has proved to be the male of *P. jacintoensis* Evans 1948, and the male described as allotype of *jacintoensis* is something different. Although the latter form is still known from only a single specimen, it is so distinctive as to merit a name. It gives me pleasure to name it after Mr. Harry A. Hill of San Diego, California, whose collecting in and around that city has added much to our knowledge of wasps of the subgenus *Hesperopompilus*.

Male: Length of body 6.5 mm.; length of fore wing 5.2 mm. Color black, posterior margin of pronotum with a pale stripe, narrowly interrupted medially. Pubescence deep blue, except on lower front, lower side of scape, posterior slope of propodeum and posterior coxae, where it is silvery. Wings subhyaline, outer margins of fore wings broadly infuscated. Clypeus, front, vertex, temples, and propleura with numerous short pale hairs; remainder of body practically devoid of erect hairs. Clypeus 1.7 times as broad as high, its apical margin convexly rounded. Front narrow, middle interocular distance .55 times transfacial distance; eyes diverging slightly above. Postocellar line slightly less than the ocello-ocular. First four antennal segments in a ratio of about 2:1:2:2, segment three about 2.3 times as long as thick. Posterior margin of pronotum subangulate. Median line of propodeum weakly impressed. Fore wing with basal and transverse median veins interstitial; second submarginal cell only slightly narrowed above, the third strongly so. Abdominal sternites 4 and 5 slightly arcuately emarginate behind; sternite 6 with a broad V-shaped emargination. Subgenital plate

shaped somewhat like an arrowhead; basal sclerite broad, partially overlying the lateral hair-tufts. Genitalia with parameres very short, bearing several long setae at apex; digiti with a fringe of setae on upper, outer margin: parapenial lobes somewhat S-shaped: aedoeagus broad, constricted before apex, which is abruptly expanded and crossed by a transverse ridge. (I have figured the genitalia and subgenital plate elsewhere, as the allotype of *jacintoensis*) (1948, Proc. Ent. Soc. Wash., 50:143, figs. 3 and 4).

Holotype male, POMONA MOUNTAINS, CALIFORNIA, September (H. C. Fall Coll.) [Mus. Comp. Zool. Harvard].

Aporinellus borregoensis Evans, new species

This interesting new species appears to belong to the *fasciatus* species-group on most characters, but the male genitalia are most similar to those of *sinuatus*, a member of the *apicatus* species-group. At the end of the description of this species I have appended a key to all the Nearctic species of *Aporinellus*.

Male: Length of body 4 mm.; length of fore wing 3 mm. Color black, apical tergite with a small white spot; wings subhyaline, outer margin of the fore wing broadly, lightly infuscated. Body extensively patterned with silvery pubescence as in other species of the genus; first four abdominal segments with prominent apical bands of silvery pubescence; apical tergite silvery. Front broad; middle interocular distance .69 times the transfacial distance; upper interocular distance 1.2 times the lower. Ocelli in about a right triangle; ocello-ocular and postocellar lines equal. First four antennal segments in a ratio of about 6:3:4:5, segment three only about 1.4 times as long as thick, segments 9 through 11 each about 1.7 times as long as thick. Second submarginal cell of fore wing about 2.4 times as broad as high; third submarginal cell absent. Abdominal sternite 6 with emargination distiictly V-shaped. Subgenital plate with median line strongly elevated; apex broadly rounded, extreme tip subacute. Genitalia (fig. 2) with parameres long, apex attenuate, both upper and lower surfaces setose on apical third: digiti subspatulate, disc roughened and clothed sparsely with small setae, two of the setae on inner margin clubbed and two of the apical setae rather long and feebly sinuate; parapenial lobes stout; aedoeagus of moderate breadth, simple.

Female: Length of body 5.5 mm.; length of fore wing 4 mm. Color black, apical two-thirds of mandibles reddish-yellow, tips black. Wings subhyaline, outer margins broadly infuscated. Body clothed with conspicuous silvery pubescence as follows: scape, entire head except for a streak across vertex; pronotum except for a band just before anterior margin; posterior half of mesonotum; sides of scutellum; metanotum, propodeum, and all of pleura and legs except tarsi; first abdominal segment except for a portion of sides; broad apical bands on tergites 2–4, each somewhat extended forward medially. Head slightly broader than high, transfacial distance 1.15 times facial distance. Clypeus 2.7 times as broad as high. Middle interocular distance .63 times the transfacial distance; upper interocular distance .9 the lower interocular. Ocelli in about a right triangle; postocellar line greater

than ocello-ocular line about as 2:1. Antennae slender, first four segments in a ratio of about 5:2:7:6, segment three equal to .8 the upper interocular distance; antennal segments 9 through 11 each more than three times as long as thick. Propodeal processes small, in lateral view forming a right angle. Tarsal comb strong, basitarsus with three comb-spines in a row, the apical one about 1.5 times the length of second tarsal segment. Fore wing with only two submarginal cells, second 2.3 times as broad as high.

Variation: The male paratypes vary in length from 3.5 to 6 mm. All of the males have only two submarginal cells, the second varying from 2 to 2.5 times as broad as high. In some specimens the parameres are slightly less extended apically than in the holotype. The females vary in length from 4.5 to 6.5 mm. Some specimens are slightly less extensively silvery than the allotype; the first abdominal tergite is silvery only medially and apically, and the bands on tergites 2–4 are somewhat triangular in shape and do not extend on to the sides. Three of the female paratypes have three submarginal cells and two have but two.

Holotype male, Borrego, San Diego County, California. 25 April, 1954, on *Croton californicus* (P. D. Hurd). *Allotype* female, same date as type. [Holotype and allotype in California Academy of Sciences.] Paratypes: five females, 17 males, all from Borrego, on *Croton californicus*, dates varying from April 25 to April 30, 1954 (P. D. Hurd and M. Wasbauer). [Paratypes in California Insect Survey, U.S. National Museum, and Cornell University.]

KEY TO NORTH AMERICAN APORINELLUS

Males

1. Subgenital plate broad and flat, the apex very broadly rounded or subtruncate 2
   Subgenital plate with the median line elevated, the sides sloping, the apex more narrowly rounded or subacute 3

2. Subgenital plate with a strong basal carina; digitus without clubbed hairs ..... *bridwelli* Evans
   Subgenital plate with only a short, weak basal elevation; digitus with many clubbed hairs ..... *fasciatus* Smith

3. Apical abdominal tergite without a white spot and not silvery; disc and apex of digitus with only minute setae 4
   Apical tergite with a small white spot and with silvery pubescence (may be concealed by the overlapping of the preceding tergite); disc and apex of the digitus with the setae longer and more conspicuous 5

4. Second submarginal cell less than twice as broad as high; ventral surface of parameres more or less completely clothed with small setae ..... *taeniatus* Kohl
   Second submarginal cell (or second plus third if both are present) more than twice as broad as high; ventral surface of parameres with setae only on the apical third..... *completus* Banks
5. Parameres abruptly truncate apically; disc of digitus more or less bare; third antennal segment nearly twice as long as thick..... *sinuatus* Evans
   Parameres attenuate apically; disc of digitus more or less clothed with setae; third antennal segment about 1.5 times as long as thick..... 6
6. Front angle of ocellar triangle about a right angle; aedoeagus rather slender; apex of digitus broadly spatulate (fig. 2) ..... *borregoensis* Evans, new species
   Front angle of ocellar triangle an obtuse angle; aedoeagus broader; apex of digitus narrowly spatulate..... *apicatus* Banks

Females

1. Ultimate tarsal segments with two or three minute spines beneath; second submarginal cell less than twice as broad as high..... *taeniatus* Kohl
   Ultimate tarsal segments without a trace of spines beneath; second submarginal cell (or second plus third if both are present) at least twice as broad as high..... 2
2. Ocelli forming a broad, flat triangle, the front angle obtuse; vertex broad; never with more than two submarginal cells..... 3
   Ocelli forming a compact, nearly right triangle; vertex narrower; with two or three submarginal cells..... 4
3. Antennae shorter, segment 3 not more than four times as long as thick, segments 8 through 11 each about twice as long as thick..... *apicatus* Banks
   Antennae longer and more slender, segment 3 about five times as long as thick, segments 8 through 11 each at least three times as long as thick ..... *sinuatus* Evans
4. Clypeus a very narrow band, fully three times as broad as high; head broad, the transfacial distance at least 1.15 times the facial distance ..... *completus* Banks
   Clypeus from 2.4 to 2.9 times as broad as high; transfacial distance from 1.1 to 1.18 times the facial distance..... 5
5. Vertex elevated in an arc above the tops of the eyes; widespread species, very variable in size (4 to 13 mm.)..... *fasciatus* Smith
   Vertex nearly straight across between the eye-tops, or at most a little elevated behind the ocelli; western species, size small (4 to 8 mm.)..... 6
6. Postocellar line much greater than the ocello-ocular line (about as 2:1) ..... *borregoensis* Evans, new species
   Postocellar line slightly greater than the ocello-ocular line (about as 3:2) ..... *bridwelli* Evans[1]

[1] The female of *bridwelli* has not previously been described, but females taken in close association with male *bridwelli* would appear to fit characters expressed here. This key is admittedly weak beyond couplet 4, but I am unable to find better characters for the females at this time.

NEW SPECIES AND SUBSPECIES OF TENEBRIONIDAE (Coleoptera)[1]

Dennis W. Boddy
Columbia Basin College, Pasco, Washington

Trichiasida idahoensis Boddy, new species

Piceous, subopaque, rather strongly alutaceous, punctures bearing short, fine, erect, brownish and not conspicuous setae; head with margin of epistoma moderately emarginate, sides of front rather strongly rounded, prominent, frontal suture moderately impressed, the impression feebly interrupted medially, a moderate medial impression just behind frontal suture, not finely or densely punctate; pronotum wider than long, widest at basal third, with apex emarginate, sides feebly arcuate from basal third to apex, feebly arcuate towards base, base wider than apex, biemarginate, broadly and more or less feebly lobed at middle, lobe truncate medially, apical angles acute and blunt, basal angles subobtuse, blunt, disc moderately convex medially, moderately reflexed at sides, lateral gutters slightly more strongly impressed at basal third, surface rather finely and not at all densely punctate at summit of lateral declivity, then more sparsely, but not more finely punctate at lateral gutter and reflexed side; elytra elongate oval, base narrower than base of pronotum, humeral angles obtuse, sides rather evenly arcuate, not margined, apex obtusely rounded, disc of each elytron with three feeble ridges, surface finely and not sparsely punctate, punctures asperate; abdominal sternites very finely and not densely punctate; tarsi sparsely clothed ventrally with dark setiform hairs; length 12.5mm.; width 4.3mm.

Holotype male, and allotype female, both from Malta, Cassia County, Idaho, Sept. 18, 1952, W. F. Barr, collector. Holotype deposited in the University of Idaho collection, allotype in the University of Washington collection.

The allotype differs from the holotype chiefly by a stronger and scarcely interrupted frontal impression, and with the basal lobe of the pronotum feebler and more broadly truncate medially; length 13 mm.; width 4.3 mm.

T. idahoensis is closest to *acerba* Horn, *hispidula* LeConte and *tenella* Casey, but differs from them by the biemarginate base of the pronotum and the coarser and sparser ventral vestiture of the tarsi. The sides of the pronotum are apparently more strongly reflexed in *idahoensis*. The species of the Tenebrionid tribe Asidini, to which *Trichiasida* belongs, are often quite variable

[1] This is part of a larger work submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at the University of Washington, Seattle.

from one part of their range to another. When more material is available for study *idahoensis* may prove to be a geographic variant of one of the previously described species.

The adults of the Northwestern species of the Asidini appear in late summer and autumn, sometimes in great numbers. They are locally referred to as "September Beetles," a name suggested by M. C. Lane of Walla Walla, Washington. The collection date of the two specimens of *idahoensis* (September) suggests that it may also be a "September Beetle."

Coniontellus malkini Boddy, new species

Rufo-piceous, shiny, essentially glabrous, elytra coarsely punctate, subrugosely punctate laterally and apically; head with epistoma moderately emarginate apically, epistomal lobes impressed, disc moderately finely and rather closely punctate; pronotum widest at basal eighth, sides substraight throughout much of their length, becoming arcuate and more strongly convergent towards the broadly rounded, obtuse apical angles, arcuate and convergent at basal eighth, disc moderately coarsely punctate, punctures sparser and finer medially, denser towards sides; elytra more or less inflated apically, sides substraight basally, sinuate before the more or less acute apex, sutural angle notched, disc less coarsely and closely punctate at suture, subconfluently punctate laterally and apically; ventral surface of abdomen not finely or closely punctate; ventral surface more rufous than dorsal surface; length 8.25 mm.; width 4 mm.

Holotype from SUMMIT LAKE, LASSEN NATIONAL PARK, CALIF., EL. 6700 FEET, October 1, 1944, B. Malkin, deposited in the collection of Mr. Borys Malkin, for whom this species has been named.

This species differs from all other known species of *Coniontellus* by its very coarsely and closely punctate elytra.

Conisattus nelsoni Boddy, new species

Piceous with obscure rufo-piceous markings, feebly shiny, rather finely and moderately closely punctate, granulately punctate on the elytra, punctures bearing moderately short, conspicuous, yellow hairs, sides of the body ciliate, ciliation of the elytra much longer at base, becoming uniformly shorter towards apex; head with epistoma emarginate, epistomal lobes impressed, punctures minutely setigerous, front piceous, epistoma and lateral lobes rufous; pronotum moderately convex, with apical margin deeply emarginate and with a dense fringe of short, fine hairs, basal margin subtruncate and feebly lobed medially, basal angles feebly produced, subright, lateral margin strongly arcuate at middle, feebly arcuate to the narrowly rounded apical angles, straighter and less strongly converging to the rectangulate basal angles, base wider than apex, disc with punctures somewhat denser laterally, color piceous becoming lighter towards apex, with a rufous band along basal margin and with a large rufous ring towards apical angles; elytra strongly convex, with sides evenly arcuate, base wider than base of

pronotum, humeri rounded and partially overlain by basal angles of pronotum, epipleura gradually widening from apex to humeral angles, color piceous with a rufous band along the suture; ventral surface rufo-piceous; protibia with external edge serrate, internal edge bearing several moderately long, slender spines, apex rather strongly produced externally, but not acutely so; length 6.1 mm.; width 3 mm. Size of 11 specimens examined ranges from 6 mm. to 7.25 mm. in length, and 2.9 mm. to 3.9 mm. in width.

Holotype male and allotype female from WALLULA, WASHINGTON, March 27, 1949, G. H. Nelson, deposited in the University of Washington collection; paratypes: one with same data as holotype, two with same data except April 5, 1945, two with same data except April 1, 1949, one with same data except March 27, 1949, two from Beverly, Grant County, Washington, April 28, 1939, O. Stout, one from Vantage, Kititas County, Washington, April 11, 1937. Specimens have been collected from sand dunes.

Although specimens of *Conisattus rectus* Casey have not been studied by the author, *nelsoni* appears to differ from it chiefly by the short, but conspicuous vestiture, the marked ciliation, the obscure rufo-piceous markings, and the protibial apeces apparently being more strongly everted.

This species has been named for Mr. Gayle H. Nelson, formerly of College Place, Washington.

Genus CONIONTIS Eschscholtz

The species of the genus *Coniontis*, like many of the wingless Tenebrionids, are significantly variable in their morphology from one area to another. The differences between species are not great as a rule, frequently consisting of differences in sculpture and body shape. These characters vary between populations, so that care must be used in interpreting the species limits. When it is necessary to make diagnoses on small samples of specimens, errors are possible.

During the past several years, in a study of the Tenebrionidae of the Pacific Northwest, the author has been able to examine over two thousand specimens of *Coniontis* from the region. About two-thirds to three-fourths of these specimens belonged to a single group in which no line could be drawn separating morphological variations. This was interpreted as representing one species, the most widespread species in the Pacific Northwest. The author has used the name *Coniontis ovalis* LeConte for this species. This interpretation of the name *ovalis* LeConte is essentially the same as that used by T. L. Casey (1890) in his first revision of the

genus *Coniontis*. Casey (1908), in his second revision of the genus, described a number of new species in what he called the "*ovalis*-group." He excluded *ovalis* LeConte from his key at that time, however, not considering it as being represented in the material under study by him. Most of the forms described by Casey in 1908 can be seen to be individual or geographic variations of this very large group which is here called *ovalis* LeConte. The following synonymy and description is now presented.

Coniontis ovalis LeConte

LeConte 1852:131; *oregona* Casey 1908:123; *breviuscula* Casey 1908:133; *sculptipennis* Casey 1908:133; *parilis* Casey 1908:135; *vancouveri* Casey 1908:135.

Body convex, with sides moderately arcuate, elytra more or less inflated, integument shiny, black; pronotum with apex emarginate, sides variable, being arcuate from apex to base, or converging from base and rather straight before apical third, base distinctly, but not strongly bisinuate, disc rather strongly convex, moderately finely to moderately coarsely punctate, punctures closer towards sides, usually regularly spaced and not markedly coalescing into longitudinal lines except occasionally towards base near the sides; elytra rather strongly convex, rather coarsely punctate, rugose, much more strongly, but rather loosely so on apical declivity; dorsal vestiture absent to short, fine and inconspicuous; length 8–13 mm.; width 4–6.5 mm. (one unusually small specimen, 6.5 mm. long and 3.1 mm. wide, from Easton, Washington, is apparently malformed).

Three major geographic subdivisions of the species are recognizable in the Pacific Northwest.

subspecies *ovalis* s.str.

Elytra with apical declivity coarsely and strongly rugose, apices normal.

This subspecies occurs west of the Cascade Range in British Columbia, Washington, and Oregon.

subspecies *oblita* Casey

Casey 1908:137.

Elytra with apical declivity moderately coarsely and strongly to somewhat weakly rugose, apices normal.

This subspecies occurs east of the Cascade Range in Oregon, Idaho, Washington (except the Okanogan and Methow Valleys), and in British Columbia east of the Columbia River. It is either absent or limited in distribution in the Columbia Basin region of Washington where it is replaced by *regularis* Casey and *setosa* Casey. *C. ovalis oblita* has been formerly considered a distinct species.

subspecies **okanagani** Boddy, new subspecies

Elytra with apical declivity moderately coarsely and strongly to some-

what weakly rugose, apices weakly to very strongly swollen in 65–70% of the individuals

This subspecies differs from *oblita* Casey chiefly in the tumid apeces of the elytra. This character has been seen in a single specimen of the subspecies *oblita* Casey. The range of *okanagani* is bounded on the east in British Columbia approximately by the Columbia River, on the west by the Cascade Range except that it occurs down the Thompson River at least as far as Lytton. The range extends southward to about Brewster, Washington.

Holotype from CASCADE, BRITISH COLUMBIA, June 19, 1954, D. Boddy and B. Malkin, deposited in the University of Washington collection.

Specimens from the following localities have been seen: British Columbia: Anarchist Mountain, Aspen Grove, Cherrieville, Chilcotin, Coldwater (Olsen's Ranch), Coldwater Valley, Copper Mountain, Cuichen Creek (13 mi. S. of Savona), Field, Kamloops, Kelowna, Lumby, Lytton, Mary, Merritt (Midday Valley), Nicola Lake, Nine Mile (Princeton), Osoyoos, Penticton (Dog Lake), Princeton (One Mile Creek), Salmon Falls, Sanca, Soda Creek, Spearing, Vernon, Voght Valley; Washington: Okanogan, Twisp

Coniontis rainieri Boddy, new species

Black, shiny, body more or less depressed, with sides subparallel, dorsum minutely setose; elytra with apical declivity coarsely, rather compactly, but not strongly rugose; head relatively finely and sparsely punctate; pronotum not coarsely, but moderately densely punctate, more coarsely and densely punctate towards sides, punctures coarser than those of head, inter-spaces densely micropunctate as well as alutaceous, base bisinuate; elytra still more coarsely and densely punctate, slightly less densely micropunctate, less alutaceous, with sides weakly and evenly arcuate; abdominal sternites shiny, finely and moderately closely punctate; length 11 mm.; width 5.8 mm.

Holotype from MT. RAINIER NATIONAL PARK, WASHINGTON, July 10, 1941, L. L. Povsky, deposited in the collection of the State College of Washington. One paratype with the same data.

C. rainieri differs from *ovalis* LeConte chiefly in the finer and more compact rugosity of the apical declivity of the elytra, and in being somewhat more depressed. The locality from which these specimens were taken appears to be rather isolated from the usual areas where members of the genus *Coniontis* are found. Further material may demonstrate that it is a geographic race of *ovalis*, but as this general appearance does not appear in the other populations of this group, it seems best to consider it a distinct species at the present time.

Coniontis lanei Boddy, new species

Black, shiny, dorsal surface apparently nude; body strongly convex,

with sides subparallel, strongly and densely punctate dorsally, punctures of pronotum irregularly placed, becoming subcoalescent and forming short, more or less longitudinal rows on the lateral declivity, interpunctural areas of both pronotum and elytra densely micropunctate; pronotum with base distinctly bisinuate; elytra rugose, strongly and compactly so on the apical declivity, punctures coarser than those of pronotum; abdominal sternites shiny, not coarsely or closely punctate, punctures bearing fine, inconspicuous hairs; length 14 mm.; width 7.2 mm.

Holotype from VANTAGE, WASHINGTON, April 10, 1937, deposited in the University of Washington collection. Paratypes from Washington: Blue Mountains (E. Dixie, 4000 feet), Cle Elum, Ellensburg, Granger, North Yakima. Vantage (and six miles west of), Wallula, Whiskey Dick Canyon (five miles north of Vantage, Kititas County), Yakima (and 10 miles north of), Yakima River (six miles west of Ellensburg); Oregon: Ochoco National Forest (and National Forest Ranger Station), Quinton, The Dalles, Wasco.

This species can be separated from all other species of *Coniontis* by the dense punctation on the pronotum, with the punctures subcoalescent in more or less longitudinal rows on the lateral declivity. It is most easily confused with *ovalis* LeConte. In the latter species the pronotal punctation is more regularly spaced, although sometimes there is a tendency for coalescence into short rows towards the basal angles. In *lanei* the rugosity of the apical declivity of the elytra is usually coarser and more compact than in *ovalis*. The size of *lanei* averages larger than that of *ovalis*. The size range of the paratypes of *lanei* is: length 11–15 mm.; width 5.5–7.2 mm. The shape of the elytra of *lanei* varies from being slightly inflated to slightly cuneiform.

It is a pleasure to name this species for Mr. Merton C. Lane of Walla Walla, Washington, who has contributed so much to the understanding of Northwestern Tenebrionids by his indefatigable collecting of materials, including several specimens of this species.

Coniontis nemoralis borealis Boddy, new subspecies

Body moderately convex; integument piceous black, not strongly shiny, faintly aeneous, pronotum moderately alutaceous, elytra more strongly alutaceous on apical declivity than towards base, punctures moderately fine, bearing fine, pale, decumbent, and not long hairs; head moderately coarsely and not closely punctate; pronotum moderately sparsely punctate, more coarsely and densely punctate laterally, with the base transverse and very weakly arcuate between the moderately produced basal angles; elytra subinflated apically, with surface of disc irregular, particularly on apical de-

clivity where it is undulato-rugose, the punctures not fine; length 9.75 mm.; width 4.75 mm.

Holotype female and allotype male both from CHARLESTON, COOS COUNTY, OREGON, June 7, 1952, B. Malkin, deposited in the University of Washington collection. Paratypes from Oregon: Charleston (Coos County), Ocean Park, Pistol River (Curry County); California: Del Norte County.

The paratypes differ from the type chiefly in the color of the pubescence which may be cinereous or yellowish, the shape of the elytra in which the sides may be subparallel or inflated, and in the color of the integument which may have a feeble to rather noticeably subaeneous tinge; size range of paratypes: length 7.75–9.75 mm., width 3.5–4.75 mm.

This subspecies differs from the typical form in the more convex shape, the finer elytral punctation, the more irregular surface of the elytral disc with the rugosity being more undulate on the apical declivity, and the subaeneous coloration. It differs from all other known Northwestern forms of *Coniontis* by the transverse base of the pronotum, and the fine, but usually conspicuous vestiture.

Eleodes (Pseudeleodes) granosa LeConte, var. **pilifera** Boddy, new variety

Black, alutaceous, body subfusiform, sparsely pilose; head feebly, not densely muricato-punctate, each puncture bearing a rather long, black, reclinate, stiff seta; pronotum subquadrate, slightly wider than long, apex moderately emarginate, base feebly arcuate, sides moderately arcuate becoming feebly sinuate towards apex, straight towards base, feebly crenulate, apical angles acute, moderately produced, basal angles obtuse, disc rather strongly convex, coarsely, densely, confluently punctate, apex arcuate; elytra with sides somewhat flattened, apex somewhat attenuate, disc impunctuate, moderately convex, tubercles shiny, the series of large tubercles each bearing a long, stiff, more or less erect hair, the small tubercles each bearing a minute seta; ventral surface moderately densely granulate; prosternal process arcuate, not vertically declivous apically; profemora sinuate apically on outer edge; length 13.5 mm.; width 5.5 mm.

Holotype male, collected at DURKEE CREEK, [OREGON] April 14, 1940, deposited in the Oregon State College collection.

E. granosa LeConte is a rather markedly variable species, but specimens bearing long hairs have never been reported. Two specimens of *granosa* have been seen in material collected by H. Lanchester at Parma, Idaho. These differ from the type of *pilifera* not only in the absence of hairs, but in details of sculpture. The elongation of the setae into hairs and the minor variations

of sculpture do not seem to warrant the elevation of *pilifera* to specific rank although the accumulation of material in the future may dictate otherwise. As far as the author is aware, only three specimens of *granosa* have been collected in the Pacific Northwest. The presence of long hairs on the Durkee Creek specimen makes a Latin designation desirable. By the use of the term "variety" the author implies that the specimen with long hairs is a product of the same gene pool as the two specimens lacking long hairs, and that long-haired individuals are less frequent.

Eleodes (Blapylis) robinetti Boddy, new species

Female: body relatively elongate; integument black, moderately shiny, moderately alutaceous; head rather coarsely and densely punctate, with a medial, small, irregular, impunctate area just in front of the frontal suture; pronotum wider than long, widest before middle, with apex moderately emarginate, base transverse, sides arcuate and more strongly converging apically, becoming almost straight towards base, then briefly sinuate before basal angles, disc moderately convex, coarsely and densely punctate, becoming moderately strongly granulate towards sides; scutellum transverse, with apex rounded, disc shiny and impunctate; elytra with sides weakly arcuate medially, humeri oblique or very obtusely rounded, disc coarsely and rather closely punctate towards suture, punctures obsolete laterally and apically, granulation coarse, subconical, and irregular laterally, acuminate apically, and reduced in size towards suture, punctures and granules in obscure, close series; abdominal sternites shiny, moderately coarsely granulato-punctate; prosternal process mucronate; length 14 mm.; width 6 mm.

Male: protarsal ventral tufts not strongly developed, restricted to apices of the first and second protarsomeres; aedeagus with sides of lateral lobes or apicale rather strongly sinuate and continuous with the relatively large and broadly rounded basal lobes, disc of apicale rather evenly and not strongly convex longitudinally, apex more or less attenuate and flattened in cross-section.

Holotype female and allotype male from ROBINETTE, OREGON, June 18, 1938, M. H. Hatch, both deposited in the University of Washington collection. Paratypes from Oregon: Bear Springs (Wasco County), Bend, Cline Falls (near Redmond), Condon, Ione Creek, Manns Lake, Maupin (Pine Grove District), Quinton, Robinette; Washington: Cooks Lage, White Salmon, Walla Walla, Wawawai.

E. robinetti differs from *tenebrosa* Horn, with which it is most easily confused, chiefly in the shape of the pronotum, having less strongly and evenly rounded sides. Also, the pronotum is less extensively granulato-punctate, and the elytral granules are larger than in *tenebrosa*. The size range of *robinetti* is 11.9–15 mm. in length and 4.4–6.8 mm. in width.

Eleodes (Blapylis) novoverrucula Boddy, new species

Male: black, shiny, body robust; head coarsely and very densely punctate, the punctures frequently confluent; pronotum wider than long, with apex moderately emarginate, base feebly arcuate, sides strongly and evenly rounded, becoming briefly and not strongly sinuate towards basal angles, disc moderately convex, surface coarsely and densely punctate, becoming muricato-granulate laterally and rather rugose, integument feebly alutaceous; scutellum punctate; elytra with sides becoming rather feebly arcuate medially, giving a rectangulate appearance to them, humeri obtusely rounded, disc rather flattened, at most obscurely punctate towards suture, granules acuminate and subreclinate, becoming gradually stronger towards sides and arranged in close, obscure series, integument feebly alutaceous; abdominal sternites shiny, not finely or densely punctate; prosternal process vertically declivous apically; protarsal tufts small and obscure; length 11.5 mm.; width 6 mm.

Holotype male and allotype female from GRAND COULEE, PARK LAKE, WASHINGTON, April 28, 1946, M. H. Hatch, deposited in the University of Washington collection.

Paratypes from British Columbia: Cascade, Columbia Lake, Creston, Sanca; Washington: Almota, Asotin, Beverley, Bickleton, Blue Mountains (Godman Springs, 6000 ft.), Boyds, Brewster, Buena, Cheney (Turnbull Slough), Clarkston, Cle Elum, Colfax, College Place, Coulee City, Coulee Dam, Dayton, Deep Creek, Deep Lake, Disautel, Dixie (4000 ft.), Dryden, Electric City, Ellensburg, Endicott, Ephrata, Goose Lake (Grant County), Grand Coulee (Blue Lake, Dry Falls, Lake Lenore, Park Lake, Steamboat Rock, Upper Coulee), Grandview, Granite Lake (Spokane Country), Kahlotus, Kamiak Butte, Kennewick, Kittitas, Kooskooskie, Lake McElroy Latah, Lind, Lowden, Lyon's Ferry, Mabton, Manson, Moses Lake, Newman Lake, North Yakima, Oaksdale, Pateros, Paterson, Perry, Pullman, Ritzville, Rock Lake, Roosevelt, Satus Creek (Yakima County), Six Prong, Soap Lake, Spearfish, Sprague Lake, Spokane, Starbuck, Stratford, The Potholes (Grant County), Tieton, Tonasket, Toppenish, Touchet, Twisp, Uniontown, Vantage, Walla Walla, Wallula, Waterville, Wawawai, Wenatchee, Whiskey Dick Canyon (5 miles N. of Vantage, Kittitas County), White Bluffs, White Swan, Wilbur, Wilma, Yakima, Yakima Valley; Idaho: Big Creek (Goldburg), Cedar Mountain (Moscow), Chilco (Kootenai County), Coeur d'Alene, Craig Mountains, Flynn Creek (W. of Boles), Joel, Kellog, Lewiston, Moscow, Moscow Mountain, Nigger Creek, Parma (needs confirmation), Riggins, Sagle (Bonner County), Waha Lake, White Bird, Worley; Oregon: Cecil, Enterprise, Freewater, Kamela, Milton, Quinton, The Dalles, Tollgate (Blue Mountains), Wallowa Mountains; Montana: Butte, Polson, St. Regis. The following records are probably in error: Blaine, Wash., Keyport, Wash., Pe Ell, Wash., and Seattle, Wash.

The morphology of *novoverrucula* varies throughout its range. Specimens from Vantage, Washington are smaller than those from the type locality, with the elytra becoming subquadrate in appearance, the granulation finer, the integument more alutaceous

and the sides of the pronotum frequently subangulate at the sides. Specimens from southeastern British Columbia, northern Idaho, and western Montana become shinier, usually larger, and with the elytral granulation much coarser than specimens from the type locality. The punctation of the pronotum is usually coarse and dense, but varies towards being somewhat finer and subsequently less dense. The elytra are essentially impunctate, although obscure punctation can sometimes be seen. In specimens where the granulation is coarser the surface becomes irregular giving a pseudopunctate appearance. The size of *novoverrucula* ranges from 8.9–13.7 mm. in length, and 4.4–6.9 mm. in width.

E. novoverrucula is most easily confused with *rotundipennis verrucula* Blaisdell. It differs from *verrucula* in the absence of elytral punctation, although there is a tendency towards obscure punctation in specimens of *verrucula* from southern Oregon, in the more markedly acuminate elytral granules, the straighter sides of the elytra, the usually denser punctation and usually weaker basal constriction of the pronotum. The two forms have virtually similar male genitalia, with the sides of the lateral lobes or apicale sinuate to very feebly arcuate and continuous with the rather broadly rounded basal lobes, and the disc of the apicale rather strongly arched longitudinally. This differs from *cordata* Eschscholtz, and related species, in which the sides of the apicale are rather strongly arcuate, the basal lobes rather well defined and more or less discontinuous with the disc and sides. *E. novoverrucula* and *verrucula* are rarely taken from the same locality, but when they are, they can be easily separated by morphological differences.

E. novoverrucula has been erroneously reported in the literature as either *pimelioides* Mannerheim or *verrucula* Blaisdell. F. E. Blaisdell, in his 1909 monograph of *Eleodes*, considered this form as *E. pimelioides* and other authors followed this opinion. J. A. Hyslop (1912) obviously confounded several species under this name. However, Hyslop presented an excellent illustration (fig. 27) of *novoverrucula* under the name *pimelioides*.

In 1918 Blaisdell described *nunenmacheri* and a subspecies of it, *verrucula*, from southern Oregon and northern California. Since that time, *novoverrucula* has been erroneously identified as *verrucula*. Unfortunately, most specimens of *verrucula* in Northwestern collections have been identified as *patruelis* Blaisdell, a

name first applied to material from Utah. The more northern material was apparently not associated with *verrucula* because of a shinier integument and coarser sculpturing. However, there appears to be no way of separating the two forms when specimens from throughout the Northwest are examined. This is also true for the type specimen of *patruelis* so that this name is suppressed as a synonym of *verrucula* (New Synonymy). Furthermore, although few specimens of *nunenmacheri* have been available for study, there seems to be little similarity between it and *verrucula*. On the contrary, northern specimens of *verrucula* can be found that intergrade with typical *rotundipennis* LeConte from the western parts of British Columbia, Washington, and Oregon. As a consequence, *verrucula* is considered as a subspecies of *rotundipennis* by the present author. *E. nunenmacheri* is considered a valid species.

Eleodes (Metablapylis) nigrina maclayi Boddy, new subspecies

Prontum with punctures rather coarse and dense; elytra rather coarsely punctate, punctures becoming rather strongly rugose laterally; integument quite shiny; sexes not markedly dimorphic; length 16.5–18.1 mm.; width 6.4–8 mm.

Holotype from Talent, Oregon, Nov. 9, 1934, L. G. Gentner, collector, deposited in the California Academy of Sciences collection. Paratypes from Oregon: Lake Creek (Jackson County), Medford, Talent. All of these localities are in southwestern Oregon.

This subspecies can be readily separated from all other subspecies of *nigrina* by the combination of the coarse punctation and shiny integument.

F. E. Blaisdell had labeled a number of specimens of this form as paratypes, but a description was never published. I take pleasure in using the same name selected by Blaisdell for this subspecies. It is named for Mr. A. T. McClay of Davis, California, who has collected a large series of specimens from southwestern Oregon.

Corticeus hatchi Boddy, new species

Subopaque, dark castaneous with legs, antennae, front and labrum paler, dorsal surface densely punctate, head, pronotum, and apical declivity of elytra with moderately long, pale hairs; head with front finely punctate, sides of front weakly reflexed, hairs directed forward; pronotum slightly longer than wide, apex truncate, apical angles obtuse, not at all produced, sides finely margined, evenly and weakly arcuate, base arcuate, basal angles obtuse and not produced, disc rather strongly convex, punctures close and rugulose at middle, much sparser at sides; elytra with disc less closely

punctate than pronotum, apical third moderately sparsely granulate, hairs curved posteriad; pygidium dark, rather finely and not sparsely punctate; fifth abdominal sternite with a small apical tooth, not impressed basally; length 2.75 mm.; width 0.85 mm.

Holotype from PRINEVILLE, OREGON, 1934, W. J. Buckhorn collector, deposited in the California Academy of Sciences collection. One paratype from Royston, Oregon. F. P. Keen, collector. Both specimens collected from *Pinus ponderosa.*

This species is markedly distinct from all other known Northwestern species of the genus. It is most similar to *opaculus* LeConte from which it differs by the presence of the dorsal hairs, the granulation on the apical declivity of the elytra, the denser and rugulose punctation of the pronotum, and the absence of the transverse ridge behind the frontal suture.

I take pleasure in naming this species after Dr. Melville H. Hatch of the University of Washington who has contributed more than any single individual towards the understanding of the Northwestern Coleoptera, and who has consistently encouraged me in my interest in the Tenebrionidae.

Blapstinus barri Boddy, new species

Black, subshiny, moderately densely clothed with pale conspicuous, recurved, flavo-cinereous hairs, body moderately convex; head closely and moderately coarsely punctate; pronotum with apex weakly emarginate, base lobed medially and becoming straight towards basal angles, sides evenly and not at all strongly arcuate, apical angles obtuse and rounded, basal angles obtuse and blunt, disc densely punctate throughout, with punctures becoming elongate laterally, interspaces alutaceous; scutellum punctate; elytra with sides evenly, but not strongly arcuate, humeri obtuse and rounded, disc with striae moderately impressed, less strongly so towards base, strial punctures moderately coarse and close, interstrial spaces somewhat convex, obscurely punctate, rather strongly alutaceous; abdominal sternites rather strongly and closely, but not coarsely punctate, surface alutaceous; length 4.75 mm.; width 2.15 mm.

Holotype from 8 MILES EAST OF RUPERT, IDAHO, July 19, 1952. W. F. Barr, collector; one paratype from Vale, Oregon, June 15. 1951. Borys Malkin. Type deposited in the collection of the University of Idaho.

This species is most similar to *gregalis* Casey and *pulverulentus* Mannerheim. It can be separated from them by the paler vestiture and the rather markedly alutaceous elytra. It differs from *gregalis* Casey by the punctures not being coalescent at the middle of the pronotum, and from *pulverulentus* Mannerheim by the

pronotal sides being rather evenly arcuate and not sinuate or subsinuate towards the basal angles.

This species is named for Dr. William F. Barr of the University of Idaho, who collected one of the two specimens available for study.

Acknowledgments

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NEW BOMBYLIID FLIES FROM CHIAPAS, MEXICO

(Diptera)

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University of California, Berkeley, California

The specimens here described are from material reared from nests of the bee genus *Melitoma,* at Francia, near Cintalapa Chiapas, Mexico. This material was collected in the field by R. C. Bechtel and E. I. Schlinger on a Mexican expedition sponsored by the Associates in Tropical Biogeography, University of California, Berkeley, and given to the writer by E. G. Linsley and J. W. MacSwain of the University of California.

The flies before us belong to the genus *Anthrax,* perhaps better known in our American literature under the generic names *Argyramoeba* and *Spogostylum.* I have compared these specimens with related forms in my collection, eventually to be deposited in the California Insect Survey material at Berkeley.

Anthrax cintalapa Cole, new species

(Figure 1)

The basic body color is black, with mostly black pile. The wings are hyaline, with a dense pattern of blackish color very similar to that of *irrorata* Say.

Male: Head black, typical in form for the group (rounded, with a receding face), tomentum and pile black. Antennae black, third segment with the usual "pencil" of hairs at tip, slender portion slightly longer than the broad base. Occiput with a few whitish tomentose spots, most noticeable in posterior emargination of the eye. *Mesonotum* and scutellum black, black pile scant and short on disc; some white patches of scales and some whitish pile on prothorax; whitish scales at apex of scutellum; some reddish yellow hairs beneath wing base. Pleura dull gray-black, with scant vestiture, mostly pale scales. Coxae black, with black hairs and whitish scales. *Legs* with black setae and silvery white tomentum; femora black, hind pair paler beneath; tibiae and most of basitarsi yellowish brown, apical tarsal segments black. *Abdomen* broad at base, tapering rapidly; black in color, with rather long, black bristle-like hairs; tomentose covering of dorsum largely black and appressed; a white tomentose triangle on second abdominal tergite and white tomentose spots on posterior portion of tergites three to five. Hypopygium largely reddish in color, the dorsal valves large, tapering, elongate and of characteristic shape. Halteres mostly black, the tip of the knob yellowish white. *Wings* blackish basally, and with a most intricate pattern of blackish areas and droplets, too involved to describe (see fig. 1). (The

costal cell, for example, has twelve small spots alternating with small hyaline areas.)

Female: With the same general color, vestiture and wing marking. Allotype slightly reddish in body color of pleura and abdomen, being somewhat teneral. Considerably more white pile and tomentum on head and thorax than in male; the white scales at apex of abdomen more erect and enlarged apically.

Holotype male, from Francia, eight miles n.e. Cintalapa Chiapas, Mexico (reared by R. C. Bechtel, E. I. Schlinger), April 3, 1953; female allotype, with same date, tips of both wings broken off; one female paratype, with same date, a rather teneral specimen. All specimens were reared from nests of *Melitoma euglossoides* Lepeletier and Serville, and each has a pupal case mounted on the pin beneath the body of the emerged adult.

This species is described, knowing that it might prove to be a race or variant of the common *Anthrax irrorata* Say, better known in old collections and early literature as *Anthrax oedipus* Fabricius (described from the West Indies). The parent stock,

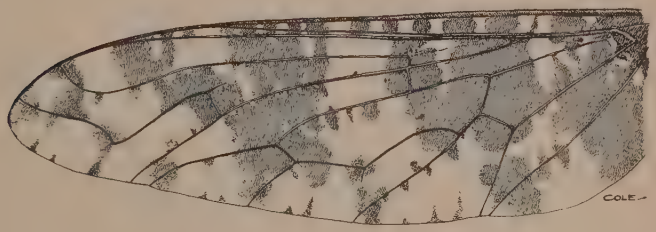

Fig. 1, Wing of *Anthrax cintalapa* Cole.

I would guess, was South American. I have a closely related species, with similar spur veins, basic wing pattern, and markings, from Constitucion, Chile. Specimens from Oregon (considered *irrorata*) and from California have a much more reduced and spotted wing pattern, as have some specimens from the East; however, one specimen from Maryland has a more "coagulated" pattern, as has one from New York (larger dark areas, the central portion of the wing largely solid brownish black). In all of these specimens the male genitalia present good specific characters and the hypopygium is comparatively large. My collection is not adequate to make any analysis of this "complex."

Anthrax mexicana Cole, new species

The basic body color is lead-black, with a mixed black and whitish covering of pile, but the general appearance "black." The wings are smoky black basally, the apical half hyaline, the color gradually shading into the clear area, with no sharp line of demarcation. Length about 11 mm., wing 12.5 mm.

Male: Head black, face and frons rounded, receding, somewhat bulbous; face thinly gray pollinose; frons and face with short, erect covering of black pile (like a "butch"); some silvery hairs above oral margin. The very narrow cheek margin below the eye is yellowish. *Mesonotum* and scutellum dull black; pile of mesonotum mixed black and gray, paler and longer anteriorly, with ruff mostly gray and white. The triangular scutellum has black hairs, longer on margin, with a few whitish scales on disc. Pleura and pectus thinly pale-haired, long and white below pronotum. Calypteres black, with a pale fringe. Legs black, with black setulae and a flat black covering of scales which has a silvery sheen in certain lights. *Abdomen* black, broad at base and tapering. The short first segment has pale pile, a dense "powder puff" of white pile on each side, contrasting with the dense black pile of the following three tergites. The three apical tergites (5, 6 and 7) with a dense appressed mantle of silvery scales. The more or less concealed hypopygium reddish in color. Knob of halteres ivory white at tip and below, otherwise black. The comparatively large wings deep smoky black basally, shading back from costa across base of cell R_5 (1st posterior), basal half of discal cell, and base of cell Cu_1, the blackish color filling all of anal cell and anal angle. There is a long spur at base of R_{2+3} (none projecting into cell R_4); no spur vein projecting into cell M_3 as in *cintalapa* (see fig. 1).

Female: Very similar to male in most characters. No silvery pile above mouth margin, and the large silvery apex of the abdomen is lacking, scales reduced to a few whitish and more erect ones on sides of tergites six and seven.

Holotype male, from FRANCIA, EIGHT MILES N.E. CINTALAPA CHIAPAS, MEXICO (reared by R. C. Bechtel and E. I. Schlinger), April 3, 1953; female allotype, with same data; one male paratype, also with the same data on the pin. Adults were reared from old cells of *Melitoma* which had been appropriated and provisioned by *Centris hoplopoda* Moure. The empty pupal case is on the pin beneath the two types, lacking in the paratype male.

I have not seen this species in collections made in the Southwest, and it is not among the few species noted by Osten Sacken in the Biologia. *Anthrax anale* Say and *A. argyropyga* Wiedemann have the male abdomen silvered at the apex, but are much smaller, and the wing is sharply hyaline and black, without shading.

A NEW SPECIES OF TYPHLODROMUS FROM CALIFORNIA

(Phytoseiidae: Acarina)

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During the winter of 1956 and the spring of 1957, large numbers of an undescribed species of typhlodromid mite were recovered from grape bark in the vicinity of Lodi, San Joaquin County, California. A few representatives of the immature forms were obtained by rearing at Davis.

Typhlodromus smithi Schuster, new species

Female.—Exclusive of gnathosoma or legs. The means and standard deviations for 25 slide-mounted specimens were .391 I .008 mm. long × .240 I .02 mm. wide. Off-white, feeding individuals often greenish, reddish, or tan. Dorsal shield with faint reticular pattern particularly in two pronounced whorls lateral and posterior to setae D4 and D5; 16 pairs of dorsal setae, eight pairs marginal; setae associated in dorsal rectangle not surpassing bases of those following; length of lateral setae one through three subequal to distance between bases of D2's (± 30 microns), four through 6 longer by about 1/4; M2 and L8 longer by over two times; M2 not paired; setae S1 and S2 present on lateral interscutal membrane; three small pores located between L4 and D2, posteriomesad to L6 and anteriomesad to M2. Gnathosoma with normal setal pattern. Fixed member of chelicera with four distinct teeth; a minute seta associated with basal tooth; movable member with small tooth at inner distal 1/3. Pedipalps with customary number of setae, lacking setae of unusual shape. Tritosternum not distinctive. Sternal scutum bearing two pairs of setae, the third pair removed from the scutum and arising from the interscutal membrane; metapodal plates indistinct. Peritreme extending to middle of coxa II. Ventri-anal scutum with two pairs of preanal setae and a pair of small pores; one pair of setae located between the ventri-anal and genital scuta and two additional pairs laterad. Leg IV bears one macroseta on the basitarsus and another of intermediate length occurs midway on the inner surface of the tarsus. A coxal gland with scelerotized neck subequal in length to diameter of gland is visible in all adult females.

Male.—Chaetotaxy of dorsal shield is identical to that of female except for S2 which appears to arise from the margin of the shield. Ventri-anal scutum with four pairs of setae and a pair of pores. Macroseta present on leg IV.

Larva.—Dorsum approximately .19 mm. long × .17 mm. wide; with 10 pairs of setae, three pairs of which are long, the posterior pair being 2/3 length of dorsum; dorsum faintly divided into large anterior and small posterior shields; only the posterior pair of macrosetae occur on the smaller division. Gnathosoma with anterior and exterio-posterior rostrals, palpal

segments with usual number of setae, all of which appear simple. Venter with eight pairs of setae plus three anal setae; all coxae with two pairs of setae; macroseta on leg III. *Protonymph.*—Dorsum approximately .21 mm. long × .17 mm. wide; with 17 pairs of setae. Outline of ventri-anal plate may be visible bearing two pairs of preanal setae. *Deutonymph.*—Dorsum approximately .35 mm. long × .27 mm. wide; full compliment of setae dorsally and ventrally as in the adult; scuta not distinct.

This species has been recovered at Acampo, Lodi, and Victor, San Joaquin County, California, on December 3, 1956, January 29, 1957, and March 13 and 20, 1957, by L. M. Smith and R. O. Schuster.

Holotype female, VICTOR, SAN JOAQUIN COUNTY, CALIF., March 13, 1957, is deposited in the California Academy of Sciences; *paratypes* in the California Academy of Sciences, California Insect Survey, University of California at Davis, United States National Museum, and in the collection of Dr. D. A. Chant.

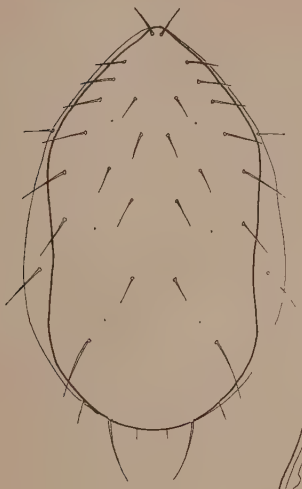
Two other typhlodomid mites, *T. irregularis* Evans and *T. americanus* (Garman) have only two pairs of setae on the ventri-anal scutum and eight pairs of lateral setae. *T. smithi* markedly differs from these species in the length and placement of the dorsal setae and in having only two pairs of setae arising from the sternal scutum. The placement of a pair of setae between the genital and ventri-anal scuta is not consistent with most other typhlodromid mites. Projecting the ventri-anal scutum to include this pair of setae does not produce a likeness to any species with eight pairs of lateral setae and three pairs on the ventri-anal scutum.

Prey species, observed in laboratory cultures, include *Tetranychus pacificus* McGregor and *Eotetranychus willamettei* (McG.). There was also some indication of feeding on *Eriophyes vittis* (Pgst.).

I take pleasure in naming this species after Dr. Leslie M. Smith who has been interested in this group of mites for many years and who has been of great assistance in collecting this species.

EXPLANATION OF PLATE 1

Typhlodromus smithi, female—*a,* dorsal shield; *b,* venter; *c,* chelicera; *d,* posterior end of peritreme; *e,* coxal gland. Larva—*f,* dorsum; *g,* venter.



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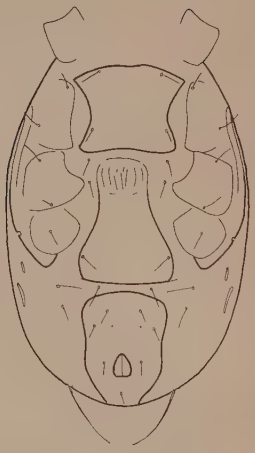

b

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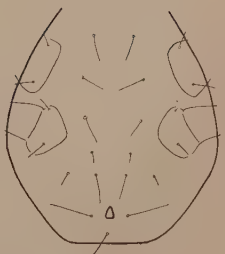
e

f



g

A PREY RECORD FOR THE GENUS CHIRODAMUS

(Hymenoptera: Pompilidae)

In his recent treatment of the Pepsinae, Townes[1] refers eight North American species to *Chirodamus*, which is considered by him to be a primitive genus in the subfamily. However, apparently no information on the nesting habits of these species has been recorded.

A specimen of *Chirodamus pyrrhomelas* (Walker)[2] was recently forwarded to the California Insect Survey collection by Dr. Willis J. Gertsch, of the Department of Insects and Spiders, American Museum of Natural History, whose continued cooperation and help to the Hymenopterists interested in spider wasp biologies is most gratifying. The specimen, collected in Portland, Oregon, during September, 1951, by M. J. Sargent, and labeled "wasp carrying the spider," reached the American Museum together with its prey, a mygalomorph spider. The prey was determined by Dr. Gertsch as a female *Antrodiaetus pacificus* Simon (Accatymidae), a so-called "folding-door tarantula." This group, interestingly, is presumed to be a primitive member of the tarantula series.

According to Gertsch[3], the males of these burrowing tarantulas are the commonest mygalomorph spiders in the Pacific Northwest, roving during the late summer, whereas the females live in double-door burrows, which are often concealed under stones or debris. As a result of their secretive habits and hidden burrows, relatively few females are known in collections. It is therefore interesting to note that the above cited prey was a female and possibly was coaxed or dragged from its burrow by the wasp. —JERRY A. POWELL, *University of California, Berkeley.*

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[1] Townes, Henry, 1957. Nearctic wasps of the Subfamilies Pepsinae and Ceropalinae, U.S. Nat. Mus. Bull. 209, 286 pp.

[2] Determination by Dr. P. D. Hurd Jr., University of California, Berkeley.

[3] Gertsch, Willis J., 1919, American Spiders, D. Van Nostrand Co., Inc., New York, 285 pp.

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* New names in bold face, synonyms and homonyms in italics.

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